

5-2003

## Ownership variables and capital structure: Evidence from Chile

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**OWNERSHIP VARIABLES AND CAPITAL STRUCTURE:  
EVIDENCE FROM CHILE**

**A DISSERTATION**

**By**

**SUAD GHADDAR**

**Submitted to the Graduate School of the  
University of Texas-Pan American  
In partial fulfillment of the requirements for the degree of  
DOCTOR OF PHILOSOPHY**

**May 2003**

**Major Subject: Business Administration**

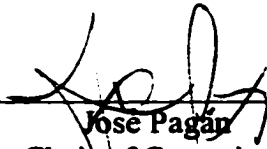
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**Approved as to style and content by:**



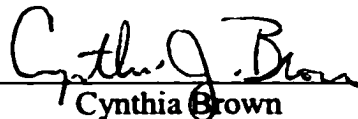
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## ABSTRACT

Ghaddar, Suad. Ownership Variables and Capital Structure: Evidence from Chile.

Dissertation, Doctor of Philosophy (Ph.D.), May 2003, 142 pages, 32 tables, 2 figures, references, 107 titles, 2 appendices.

The relationship between ownership structure and capital structure is one of the less understood areas within the corporate finance literature. This study attempts to address this issue within a unique organizational and institutional framework that may help explain the intricacies of such a relationship. The Chilean corporate scene with its high ownership concentration levels, industrial group structure, and familial control provides a rich testing ground to analyze how ownership variables define a firm's leverage policy.

Research has supported both a positive and a negative relationship between ownership concentration and leverage levels. On the one hand, firms characterized by high levels of ownership concentration are expected to prefer debt to equity financing in order to avoid ownership dilution. However, high levels of ownership concentration imply lower levels of diversification on the part of managers/owners and, consequently, lower tolerance to high levels of debt in order to reduce the risk of the firm.

Within Chile, several variables are hypothesized to impact or moderate this relationship. The hypotheses developed in this study explore how family ownership, the business group structure, the issuance of dual-class shares, the use of pyramiding

structures, and the ensuing effects on the agency costs of debt and equity help define the interaction between ownership variables, leverage, and debt maturity.

The empirical analysis follows 102 non-financial, non-utilities Chilean companies. After controlling for several determinants of capital structure, results reveal that family-controlled firms employ higher levels of debt than their non-family counterparts. Further analysis shows that debt is sought for its control function. In the presence of alternative control mechanisms, namely pyramiding structures, family firms utilize less debt. The agency perspective, which rests on the premise that family-owned businesses have lower incentive-related agency costs of debt, is strongly supported within the context of debt maturity choice; managerial involvement by family members results in less reliance on short-term debt. Other results show that group membership leads to lower levels of debt unless a bank is present within the group. No support is found for debt's governance role. Informational asymmetries significantly affect a firm's capital structure.

## ACKNOWLEDGEMENTS

I would like to express my appreciation to the members of my committee – Dr. José Pagán, Dr. H. Young Baek, Dr. Cynthia Brown and Dr. Salma Ghanem - for their time, valuable suggestions, help and encouragement first in their classes and then in producing this dissertation.

I am greatly indebted to several people: Mr. Emery Ventura at *Economática* in New York and Mr. Augusto Gonzalez at *Fecu* in Chile for their help with obtaining the data; Mrs. Olivia Garcia for her tremendous help and dedication throughout the past six years; Mrs. Melinda Zuniga for her friendly face, her positive attitude and great help with all administrative matters; the three Ph.D. program directors during my stay – Dr. Michael Minor, Dr. Jane LeMaster and Dr. John Sargent – for addressing all my concerns throughout with the utmost of professionalism, care, and thoughtfulness.

Finally, no one deserves more thanks than my wonderful husband Habib, whose constant encouragement, patience, and belief in me ultimately made this Ph.D. possible. His support and companionship were critical ingredients in providing me the strength and persistence necessary to complete this work. To him, my parents and my children, I dedicate this work.

## TABLE OF CONTENTS

	Page
ABSTRACT.....	iii
ACKNOWLEDGEMENTS.....	v
TABLE OF CONTENTS.....	vi
LIST OF TABLES.....	viii
LIST OF FIGURES.....	x
CHAPTER I. INTRODUCTION.....	1
CHAPTER II. THEORY AND EVIDENCE ON THE RELATIONSHIP BETWEEN OWNERSHIP AND CAPITAL STRUCTURES.....	8
Theory and Evidence on a Positive Relationship between Ownership Concentration and Leverage.....	8
Theory and Evidence on a Negative Relationship between Ownership Concentration and Leverage.....	12
CHAPTER III. HYPOTHESES DEVELOPMENT.....	15
Family/Owners Control.....	15
Business Group Structure.....	22
High Agency Costs of Equity.....	27
Avoidance of the Governance Role of Debt.....	29
Avoidance of Bankruptcy and Financial Distress Costs.....	31

Alternative Mechanisms to Avoid Ownership Dilution.....	32
<b>CHAPTER IV. DATA AND METHODOLOGY.....</b>	<b>35</b>
Data.....	35
Methodology and Variables.....	38
Dependent variable: Leverage.....	39
Independent variables.....	40
Ownership variables.....	40
Capital structure determinants and control variables.....	50
<b>CHAPTER V. RESULTS.....</b>	<b>57</b>
Descriptive Statistics.....	57
Regression Results.....	64
Model 1.....	64
Model 2.....	73
Model 3.....	80
<b>CHAPTER VI. CONCLUSIONS.....</b>	<b>87</b>
<b>REFERENCES.....</b>	<b>93</b>
<b>APPENDIX A. SAMPLE.....</b>	<b>103</b>
Sample Construction.....	104
Missing Data.....	106
Subsidiaries.....	119
Exchange Rate.....	120
<b>APPENDIX B. TABLES AND FIGURES.....</b>	<b>121</b>
<b>VITA.....</b>	<b>143</b>



## LIST OF TABLES

	Page
TABLE 1 Financial Intermediary Development Indicators.....	4
TABLE 2 Select Economic Indicators.....	4
TABLE 3 Share Turnover in Selected Countries.....	17
TABLE 4 Chilean Business Groups.....	25
TABLE 5 Descriptive Statistics.....	58
TABLE 6 Descriptive Statistics.....	60
TABLE 7 Univariate Analysis.....	63
TABLE 8 Regression Results.....	71
TABLE 9 Regression Results.....	72
TABLE 10 Regression Results.....	78
TABLE 11 Regression Results.....	79
TABLE 12 Regression Results.....	85
TABLE 13 Regression Results.....	86
TABLE 14 Summary of Results.....	88
TABLE B1 Creditor Rights around the World.....	122
TABLE B2 Rule of Law.....	123
TABLE B3 Shareholder Rights around the World.....	124
TABLE B4 Takeover Provisions.....	125

<b>TABLE B5 Chilean Dual-Class Firms.....</b>	<b>126</b>
<b>TABLE B6 Regression Results.....</b>	<b>128</b>
<b>TABLE B7 Regression Results.....</b>	<b>129</b>
<b>TABLE B8 Regression Results.....</b>	<b>130</b>
<b>TABLE B9 Regression Results.....</b>	<b>131</b>
<b>TABLE B10 Regression Results.....</b>	<b>132</b>
<b>TABLE B11 Regression Results.....</b>	<b>133</b>
<b>TABLE B12 Regression Results.....</b>	<b>134</b>
<b>TABLE B13 Regression Results.....</b>	<b>135</b>
<b>TABLE B14 Regression Results.....</b>	<b>136</b>
<b>TABLE B15 Regression Results.....</b>	<b>137</b>
<b>TABLE B16 Regression Results.....</b>	<b>138</b>
<b>TABLE B17 Regression Results.....</b>	<b>139</b>
<b>TABLE B18 Regression Results.....</b>	<b>140</b>

## LIST OF FIGURES

	Page
FIGURE B1 Private Credit as a Percentage of GDP.....	141
FIGURE B2 Ultimate Ownership Structure of <i>Empresa Pesquera Eperva</i> .....	142

## CHAPTER I

### INTRODUCTION

The relationship between ownership structure and capital structure is one of the less understood relationships within the corporate finance literature. While several theoretical models depict a positive association between ownership concentration and leverage levels, the empirical literature has failed to consistently support either direction of the relationship. Some studies have reported a positive relationship (Kim and Sorenson, 1986; Agrawal and Mandelker, 1987; Mehran, 1992; Brailsford, Oliver and Pua, 1999), others a negative one (Friend and Hasbrouk, 1988; Friend and Lang, 1988; Jensen, Solberg and Zorn, 1992; Moh'd, Perry and Rimbey, 1998), and still others found no association at all (Chaganti and Damanpour, 1991; Holderness, Kroszner and Sheehan, 1999). Such empirical inconsistency can be attributed to several reasons, some of which are methodological in nature (endogeneity issues, appropriateness of proxies used, etc.) while others are a result of the plethora of variables that either moderate or completely alter the relationship. Still, other reasons confounding the analysis relate to the wide spectrum that ownership structure variables may encompass. For example, U.S. research has focused almost exclusively on managerial equity ownership as the variable of interest. Internationally, ownership variables are usually broken down into several components such as institutional, family, and corporate ownerships.

**This study investigates this relationship within a unique organizational and institutional framework that may aid in shedding light on the intricacies of such a connection. While most studies have analyzed this relationship in light of the complex U.S. corporate system—which is characterized by dispersed ownership and an active market for corporate control, among others—it is extremely useful to analyze the link between ownership and capital structures within a different context of corporate workings. The setting of interest for conducting this research is the Latin American corporate scene, specifically Chile. The appeal of such an environment stems from the unique corporate characteristics present in that setting.**

**One of the main characteristics of Latin American corporations is the high level of ownership concentration. For example, while 80 percent (90 percent) of the 20 largest firms in the U.S. are widely held using a 10 percent (20 percent) definition of control, none of the firms in Argentina or Mexico qualify as widely held under either definition (La Porta et al., 1999). The industrial group structure, which in turn is controlled by families, dominates the corporate scene of most Latin American countries (Camp, 1989; Khanna and Palepu, 2000a; Khanna and Rivkin, 2000; Sargent and Ghaddar, 2001; Sargent, 2001, 2002). From an institutional and regulatory standpoint, Latin American countries fall under the French-civil-law countries. These countries offer the weakest legal rights for corporate shareholders and creditors as well as the lowest quality of law enforcement and the lowest rating on accounting standards (La Porta et al., 1998). Such unique characteristics render this framework a very interesting and fertile ground for dissecting and understanding the intricate mechanisms of the relationship between ownership structure and capital structure.**

Apart from the characteristics discussed above, the Chilean corporate environment, in contrast to the general Latin American setting, presents us with extremely valuable testing ground for several reasons. First, Chile is considered to be the economic success story within Latin America. Its economic policies, adopted right after the overthrow of the Allende regime in 1973 and continuously reviewed and supported by the different governments in the 1970s and 1980s, are always suggested by scholars as the blueprint of economic development for other Latin American countries. Second, these economic reforms have had several important implications regarding the corporate environment in Chile. They have strengthened the role that market forces can play in many corporate decisions, and thus, they render the analysis more significant than in a setting where government intervention is more pronounced. For example, banking sector reforms and policies that included deregulation, low reserve requirements, and opening to foreign competition resulted in an increase in the number of banks and an increase in loans to the private sector<sup>1</sup>. Figure B1 in Appendix B depicts private credit as a percentage of GDP in both Chile and Mexico. While that figure is around 60 percent in Chile over the period 1980-2000, private credit in Mexico is significantly lower, never exceeding 40 percent and standing at around 15 percent in 2000. Table 1 provides further evidence on the more developed financial intermediary sector in Chile relative to other Latin American countries. Chile scores higher than Argentina, Brazil and Mexico in terms of the size of the banking sector (ratio of M3 to GDP) and the ratio of domestic credit to GDP. Given the purpose of this investigation, the importance of a minimum level of debt availability, and the significance of a setting where credit allocation is

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<sup>1</sup> Chile had 18 national banks and one foreign bank in 1973. This figure stood at 26 national banks, 19 foreign banks, and 15 *financieras* (non-bank financial institutions subject to less stringent regulations than

**Table 1**  
**Financial Intermediary Development Indicators**  
**(1991-1995)**

Country	M3/GDP	Domestic credit/GDP
Argentina	0.123	0.190
Brazil	0.281	0.272
Chile	0.306	0.461
Mexico	0.194	0.356

Source: Fogarty (1998) from the International Financial Statistics, IMF.

determined mostly by the market rather than by the government render Chile a more meaningful candidate than other Latin American countries. Third, the hyperinflationary experiences in some Latin American countries, such as Brazil and Argentina may have had important influences on the psyche of managers and their attitudes towards debt<sup>2</sup>. In an environment characterized by high levels of economic uncertainty, debt turns into an evil that needs to be avoided. Just as the Great Depression demonized the corporate use of debt throughout the 1930s and 1940s in the U.S. (McConnell and Servaes, 1995), periods marked by economic turmoil are bound to have lingering effects. Chile's relatively more stable economic situation may have allowed financing decisions to be determined more by leverage fundamentals than by economic environment variables.

Table 2 reports the average annual growth rates and the percentage change in the

**Table 2**  
**Select Economic Indicators**

Country	Average annual growth in GDP (%)					Consumer prices (% change)			
	1980-90	1990-2000	1999	2000	2000-04	1980	1990	1999	2000
Argent.	-0.7	4.3	-3.4	-0.5	1.9	100	2314	-1.2	-0.8
Brazil	2.7	2.9	0.8	4.5	3.6	-	2947	8.9	6
Chile	4.2	6.8	-1.1	5.4	5	35.1	26	3.3	4
Mexico	1.1	3.1	3.8	6.9	4.3	-	26.7	16.6	9.5

Source: World Bank.

banks) in 1980 (Bergoing et al., 2001).

<sup>2</sup> Booth et al. (2001) report negative relationships between inflation rates and debt ratios for a sample of 17 countries.

consumer price index for select years for Argentina, Brazil, Chile and Mexico. One can notice that among these four countries, Chile has had the most stable economic growth and the least pronounced inflation rates over the 1980-2000 period. In contrast, Argentina and Brazil suffered from hyperinflationary rates that were not tamed till the mid nineties.

An initial surface analysis of leverage ratios and ownership concentration across countries reveals an inverse relationship between the two. Countries characterized by high levels of ownership concentration seem to employ less debt. For example, Booth et al. (2001) report lower levels of debt for Latin American firms. The two Latin American countries in their sample, Brazil and Mexico, exhibit the lowest debt and long-term debt ratios when compared to eight developing countries and the G-7 countries<sup>3</sup>. Along the ownership dimension, none of the firms in Mexico can be classified as widely held according to La Porta et al. (1999). Similarly, Lins's (2000) sample of 79 Brazilian firms exhibits the highest total block ownership concentration and the second highest occurrence of a single majority blockholder<sup>4</sup>. A very simple correlation analysis between Lins's (2000) total block ownership concentration measures and leverage ratios for the sample of 22 countries reveals a negative relationship between the two. Such a negative relationship can be easily attributed to the low levels of debt accessibility in these countries. Because of the weak creditor protection laws and the weak enforcement of

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<sup>3</sup> Booth et al. (2001) report a total debt ratio of 30.3 percent for Brazil over the period 1985-1991 and 34.7 percent over the 1984-1990 period for Mexico. That ratio is 67.1 percent (1980-1990) for India, 73.4 percent (1980-1990) for South Korea, 47 percent (1983-1990) for Jordan, 41.8 percent (1983-1990) for Malaysia, 65.6 percent (1980-1987) for Pakistan, 49.4 percent (1983-1990) for Thailand, 59.1 percent (1983-1990) for Turkey, and 41.5 percent (1980-1988) for Zimbabwe. The G-7 countries, on the other hand, had debt ratios ranging from 54 percent (United Kingdom) to 73 percent (Germany) in 1991 (Rajan and Zingales, 1995).

<sup>4</sup> Compared to a sample of firms from another 21 emerging markets, Brazil has a total block ownership of 75 percent, where block ownership is defined as the sum of all blockholdings exceeding five percent, compared to an average of 52 percent for all countries. Furthermore, 70 percent of Brazilian sample firms



such laws in Latin American countries (Tables B1 and B2, Appendix B), creditors will be reluctant to extend generous credit policies. However, other characteristics of Latin American firms may lead us to believe that debt should be used more extensively in that environment. In an environment where control of the firm is of utmost importance, one would expect a shift away from methods that dilute ownership and towards those mechanisms that further concentrate ownership. Faced with wealth constraints, the owners of the firm will prefer to issue debt rather than equity in an attempt to avoid the dilution of ownership. Thus, higher leverage may be expected to mark corporate systems with higher levels of ownership concentration.

Although some scholars may argue that the utilization of lower levels of leverage is an issue of access rather than choice, this study tries to determine whether a deeper analysis of the relationship between ownership variables and leverage may shed more light on the intricacies of such a relationship. Even if access explains the generally lower leverage across countries, it does not help explain the relationship within each country. What may appear to be a simple fact at the country level may mask a more complex story within each country. Do firms with higher ownership concentration exhibit higher or lower levels of leverage relative to domestic firms with lower ownership concentration levels? Are traditional capital structure theories capable of explaining the variation in leverage across firms and the variation in the relationship itself? And what dimensions of ownership structure are relevant within the Chilean context?

The analysis proceeds as follows. Chapter II details the theory and empirical evidence on the relationship between ownership concentration and leverage. Hypotheses

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have a single majority blockholder compared to an average of 32 percent for all firms from other countries. This percentage is the second highest to Peru's 71 percent (Lins, 2000).

**development will be presented in Chapter III. Chapter IV describes data sources, sample selection, variables of interest and the proposed methodology. Results are reported in Chapter V. Concluding statements as well as possible directions for future research are presented at the end.**

## CHAPTER II

### THEORY AND EVIDENCE ON THE RELATIONSHIP BETWEEN OWNERSHIP AND CAPITAL STRUCTURES

The theoretical and empirical framework, within which the relationship between ownership and capital structures has been examined, primarily reflects the ownership patterns observed within the United States and other developed economies. Thus, the ownership concentration variable of interest in these studies has predominantly been represented by insider equity ownership, usually measured as the percentage ownership by managers and directors.

#### *A. Theory and evidence on a positive relationship between ownership concentration and leverage*

The rationale for a positive relationship between ownership concentration and leverage stems from the issue of control. Control is important to managers because it provides them with access to an extensive array of private benefits that may include prestige, perquisite consumption, excessive compensation packages, etc. Debt, under such circumstances, provides the manager/owner with a tool to avoid the dilution of ownership. It also serves as a defense mechanism in circumstances where control is

contested. By issuing debt, managers/owners can alter the mix of debt and equity, ultimately affecting their relative share in the firm. Both Stulz (1988) and Harris and Raviv (1988) provide theoretical models supporting the contention of debt as a defense mechanism.

In Stulz's (1988) model, leverage, among other methods<sup>5</sup>, helps to increase an incumbent's share in a firm and, consequently, increases the chances of the manager thwarting a possible takeover attempt, given their increased voting control for a given level of equity investment. Harris and Raviv (1988) also develop a similar theoretical model illustrating a positive relationship between leverage and the extent of managerial equity ownership. Again, leverage is used to affect the outcome of a takeover by indirectly determining the manager's ownership share through changes in capital structure. Debt enables the manager to overcome his wealth constraints. A manager's stake can be increased by having the firm repurchase equity from investors and finance the repurchase through debt.

The above two studies establish the linkage between insider ownership and capital structure as a consequence of the linkage between the market for corporate control and capital structure<sup>6</sup>. Thus, the conclusions of the above two models become contingent on

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<sup>5</sup> Other methods to influence a manager's equity ownership considered by Stulz include ESOPs, voting trusts, supermajority rules, and differential voting rights.

<sup>6</sup> Israel (1992) develops a model that links the market for corporate control to optimal capital and ownership structures. That model, however, does not address the relationship between capital and ownership structures directly. What is relevant to this analysis is one of the indirect implications of Israel's model. A positive relationship between ownership levels and leverage is implied by pursuing the following reasoning. Managers with high equity ownership will experience high opportunity loss on their equity holdings when a takeover is deterred (the loss stems from the unrealized rise in equity value had the rival gained control). By issuing risky debt, the opportunity loss is mitigated since a "portion of the valuation gain from a change in control accrues to the holders of risky debt" (p. 182) resulting in a lower appreciation of equity value. Thus, one would expect that managers with higher equity holdings in the firm, who are more likely to determine the success of future control contests, will pursue higher leverage in order to mitigate their opportunity loss.

the assumption of an active market for corporate control as well as weak legal protection of creditor rights.

In a different vein, Zhang (1998) provides another rationale for a positive relationship between ownership concentration and leverage. The underlying assumption of Zhang's model is that owners are risk averse. Ownership concentration increases the level of risk born by such investors and may lead to investment inefficiency in an attempt to reduce such risk. Debt's role, thus, becomes to reduce the risk exposure of the under-diversified controlling shareholder by allowing him/her to pass along part of the losses in bad states of nature to creditors. Hence, debt restores the investment efficiency.

Empirically, most of the studies analyzing the relationship between ownership structure and capital structure have utilized U.S. or other developed country samples. Rarely, do we see this issue addressed in the context of a developing/emerging market. Kim and Sorenson (1986) find that, in a sample of large U.S. industrial companies, firms with higher inside ownership had greater debt ratios than firms with lower insider ownership. The authors offer three explanations for this result. The first one deals with the issue of control, whereby insiders in their attempts to avoid ownership dilution, finance growth by issuing debt. The second explanation attributes this finding to the high agency costs of equity in high insider ownership firms. The third explanation cites the lower agency costs of debt; insiders with high ownership will ensure that covenants are not violated, since they are the ones who stand to lose the most from such a violation.

Agrawal and Mandelker (1987) use a sample of acquiring and divesting U.S. firms. They find that firms, where leverage has increased, are characterized by managers with larger common stock and option holdings than firms for which leverage has

decreased. Mehran (1992), also using US data, finds a positive association between leverage and managerial equity ownership, which he attributes to the positive role that debt plays in reducing agency costs, increasing the value of the firm and, consequently, managerial wealth. Berger, Ofek and Yermack (1997) report a “positive cross-sectional association between leverage and managerial voting power, consistent with Stulz (1988)” (p. 1413) for a sample of large U.S. industrial companies. However, their overall analysis documents lower leverage for entrenched CEOs<sup>7</sup>.

At the international level, Brailsford, Oliver and Pua (1999) utilize data on 49 Australian listed companies. Their analysis reveals a positive relation between external block ownership and leverage, a curvilinear association between managerial share ownership and leverage, and a different relationship between external block ownership and leverage is indicated at high and low levels of managerial ownership.

Wiwattanakantang (1999) analyzes the determinants of the capital structure of Thai firms. Among his findings is higher leverage in single-family-owned firms. The higher debt level among these firms is attributed to the need to maintain voting control as well as to assure outside investors that perquisite consumption will not take place. Firms that are group members and that have government and foreign investors as their major shareholders did not exhibit a significant relationship between these variables and leverage. Managerial ownership is significantly positively related to debt only when firms are owned by a single family.

The above analysis, thus, supports the conclusion that firms with higher levels of ownership concentration, whether through higher managerial, block, or family ownership, will exhibit higher levels of leverage.

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<sup>7</sup> This will be further elaborated upon in the next section.

***B. Theory and evidence on a negative relationship between ownership concentration and leverage***

Although the literature does not have theoretical models depicting a negative relationship per se between ownership concentration and leverage, research in other areas is clearly consistent with such a conclusion. Most of this research is based on the premise that managers are generally heavily invested in the firm through their human capital. The presence of equity ownership further accentuates their under-diversification and, as a consequence, risk reduction becomes a prominent motive underlying many of their corporate and financial decisions. Amihud and Lev (1981) formalize the risk reduction motive in the context of conglomerate mergers. Their interest stems from the fact that diversification as a motive for conglomerate mergers does not make sense from the stockholders' point of view given that they can achieve their desired level of risk by diversifying on their own. However, once we take into consideration managers' high level of investment in the firm, via their human capital, mergers serve the very important purpose of reducing the level of risk born by the less-than-optimally diversified managers. Amihud and Lev's (1981) empirical findings are consistent with their hypothesis.

Debt policy can serve a similar purpose. If managers were to act in the best interest of shareholders, optimal levels of debt should be utilized. However, once the manager's self interest enters the picture, risk reduction through lower leverage can become an important objective for managers who are over invested in the firm through their inalienable human capital and in many cases through their equity stake (Friend and Hasbrouk, 1988). Fama (1980) also establishes that a manager's interest in the long-term viability of the firm is a consequence of a manager's heavy human capital investment.

Although Fama goes to great lengths to separate the two functions of ownership (risk-bearing) and control (management), his conclusions are only further confirmed once we allow for managerial equity ownership. A corollary of that analysis is that, in his/her attempts to ensure the economic continuation of the firm, a manager will take the steps necessary to reduce the riskiness of the firm and the probability of bankruptcy. One method to achieve that objective is through the lower use of leverage.

Several empirical studies report a negative association between ownership concentration and debt levels. Using data on 984 NYSE firms over the period 1979-83, Friend and Lang (1988) document a negative relationship between debt and management's shareholdings. This finding is attributed to the "greater non-diversifiable risk of debt to management than to public investors." In cases where a non-managerial principal stockholder exists, higher debt levels are reported suggesting a monitoring role for these stockholders.

Friend and Hasbrouk (1988), with the motivation of how the risk reduction properties of debt may induce lower usage by managers with an equity stake in the firm, find a negative relationship between managerial holdings and capital structure policy in a sample of non-financial, non-utility U.S. corporations.

Jensen, Solberg and Zorn (1992) relax the assumption of the exogeneity of insider ownership, and use a simultaneous equation model to analyze three financial decisions: insider ownership, debt, and dividends. The results indicate that high insider ownership leads to less debt, consistent with the arguments of Friend and Lang (1988) and Friend and Hasbrouck (1988) that insiders with a major stake are less diversified, and have more incentive to reduce financial risk. The other explanation offered by Jensen et al. is that



**firms with higher insider ownership have lower agency costs of equity and higher agency costs of debt because the incentives of managers would be more closely aligned with owners than with creditors.**

**Using time series data on 311 U.S. firms over the period 1972-1989, Moh'd, Perry and Rimbey (1998) find an inverse relationship between the level of debt and ownership variables, namely, insiders' shareholdings, institutional shareholdings, and the number of outside stockholders.**

**The above analysis leads one to expect that higher levels of ownership concentration will be associated with lower levels of leverage.**

## CHAPTER III

### HYPOTHESES DEVELOPMENT

The preceding discussion leaves the door wide open when it comes to the role ownership variables may play in determining corporate debt policies. Within Chile, there are several factors that may influence the relationship between ownership and leverage. Some of these factors are manifestations of the different cultural, institutional and/or organizational frameworks within which firms operate. Among these are the pervasiveness of family-owned businesses, the prevalence of owners who are actively involved in the management of the firm, the business group structure, the frequent utilization of pyramiding structures, and the less-than-optimal diversification of owners/managers. The following analysis will develop hypotheses depicting how these and other factors play a role in defining the leverage decision of Chilean firms.

#### *A. Family/owners control*

Control is extremely important and valuable in the Latin American context in general. With families as the cornerstone of corporate ownership, evidence on the importance of control can be inferred from the different mechanisms utilized to ensure it. Top managerial positions are often controlled by family members. Within Mexico for example, appointment of directors to the board is largely a family matter with a majority

of the directors categorized as insiders (top executives of the firm, the firm's group, or relatives of these executives). Furthermore, publicly traded stock represents only a small percentage of firm ownership (Husted and Serrano, 2001). Similar arrangements can also be observed in several Chilean firms. Of the 20 national groups in Chile, control by a family can be easily identified in 18 groups. The majority of board positions are also restricted to the controlling family or group (Majluf et al., 1998). While family ownership represents a main form of Chilean ownership, a variant of this format, where the owners ultimately control the firm, centers around a group of entrepreneurs forming a coalition, getting a blockholding stake in several firms, and controlling their board of directors. The *Pathfinder*<sup>8</sup> group and the *Sigdo Koppers* groups are examples of this ownership form. The first group is comprised of four associates who have formed an investment company, *Inversiones Pathfinder*, through which they have blocks of ownership in several Chilean companies. The *Sigdo Koppers* group, on the other hand, is a coalition of several individuals each of whom has less than 10 percent stake in group firms but who collectively maintain majority ownership in these firms.

The low turnover of shares on the *Bolsa de Comercio de Santiago* provides further evidence on the tight control exercised by owners. Table 3 reports share turnover in selected countries in the early nineties. In Chile, traded shares represented 6.2 percent of total market value compared to 27.4, 75.4, 61.1 and 46 percent in Japan, Germany, the UK and the US, respectively.

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<sup>8</sup> The *Pathfinder* group is practically non-existent as of 2003. Most of the group's holdings were liquidated over the 2000-2002 period.

**Table 3**  
**Share Turnover in Selected Countries**

	Chile 1993	Japan 1991	Germany 1991	UK 1992	USA 1992
Turnover (% of total market value)	6.2	27.4	75.4	61.1	46.0

Source: Majluf, Abarca, Rodriguez and Fuentes (1998), Table III.

Why would owners/families go to great lengths to maintain control? The existence of large private benefits of control is one of the main reasons motivating the pursuit of power. There is a growing body of literature documenting the existence of such benefits. Barclay and Holderness (1989) document average premiums of 20 percent associated with the trade of blocks involving at least 5 percent of the common stock of NYSE- and Amex-listed firms. At the international level, Zingales (1994) reveals large private benefits of control in Italy as indicated by the “large premium (82 percent) attributed to voting shares on the Milan Stock Exchange” (p. 125). He attributes such large premiums to the greater probability of dilution of minority property rights and the intense competition for control in Italy relative to other countries. Nenova (2001) attempts to measure the private benefits of control by analyzing the differences in the value of shares of dual-class firms in 18 countries. She reports a wide spectrum for the value of control, one that ranges from 0 percent to 50 percent of firm market value. Seventy five percent of that variation can be explained by legal environment variables. Dyck and Zingales (2003) also document a wide range for the value of control (-4 percent to +65 percent of the equity of the firm) that is linked to institutional variables. Better accounting standards, better legal protection of minority shareholders, and better law enforcement, among other factors, are found to be associated with a lower level of private benefits of control. Thus, in the Latin American weak-legal-investor-protection and ineffective-law-enforcement environment (Tables B1, B2 and B3, Appendix B), one

would expect larger benefits of control to be produced and, therefore, a more fervent pursuit of that power.

Given that debt can play an important role in overcoming the wealth constraints of owners, enabling them to pursue expansion without diluting their equity stake, it is expected that higher levels of debt will be utilized among family/owners-controlled businesses.

Apart from the above-mentioned control perspective, the higher levels of leverage among family/owners-controlled businesses can be attributed to the lower agency costs of debt that such firms may possess. High leverage, apart from bankruptcy-related risks, also has incentive effects (Jensen and Meckling, 1976). With a high-leveraged financial structure, the manager will have the incentive to undertake risky investments, whereby if the project is successful, the owner-manager captures most of the gain, while creditors bear most of the cost in the case of failure. These incentive effects, however, are moderated in an environment where the owner-manager's stake is not limited to a small amount but rather to a considerable percentage ownership as well as in situations where firm survival is as valuable a goal as the wealth maximization objective<sup>9</sup>. Several studies in the literature directly and indirectly demonstrate the possible lower agency costs of debt in situations where higher levels of insider ownership are present, where majority shareholders are involved, and where founding family ownership exists.

In support of their empirical findings where higher inside ownership was associated with greater debt ratios, Kim and Sorensen (1986) hypothesize and formalize the contention that "the presence of agency cost-resolving covenants is more effective

and disciplinary when the contracts are written by firms with high inside ownership” (p. 143). This is due to the fact that the cost of violating such covenants is higher for insiders with a high percentage ownership in the firm than those with a low percentage ownership. The same line of reasoning can be extended to incorporate a non-manager majority shareholder, whereby the cost of covenant violation may be mostly, if not entirely, borne by that shareholder.

Empirically, Berger, Ofek and Yermack (1997) find that leverage is significantly lower when a firm has no major stockholders. This finding is in light of the idea that entrenched managers avoid debt for its governance role, and one of the indicators of entrenchment is the absence of major shareholders. Furthermore, the authors’ evidence extends to cases where leverage has increased upon the arrival of a major-stockholder director. This further establishes the role that major shareholders play in monitoring and in ensuring that managers act in the best interest of shareholders, and indirectly demonstrates that such monitoring may actually be in the interest of bondholders as well.

Along a different line, Anderson, Mansi and Reeb (2002) find that for a sample of 252 U.S. industrial firms, those with founding family ownership have significantly lower costs of debt financing relative to firms without this type of ownership. Such a finding is attributed to the lower agency costs of debt present in such companies due to “undiversified family holdings, the desire to pass the firm onto subsequent generations, and concerns over family and firm reputation” (p. 3).

In many Latin American firms, the line between managers and owners is quite blurred. Managers belong to the controlling families in numerous instances. Even when

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<sup>9</sup> Situations where firm survival is important as an objective may include cases where the founder of the firm is interested in passing down the firm to his/her heirs, the manager’s job is contingent on the viability

this not the case, one or several family members hold positions on the board of directors. For example, La Porta et al. (1999) report that the 20 largest companies in Mexico are family controlled. In 95 percent of the cases, a member of the controlling family is also the CEO, Honorary Chairman, Chairman or Vice-Chairman of the Board. Similar arrangements can be noticed in Chile as well. For example, *Empresas CMPC*, which is controlled by the *Matte* family, has family members sitting on its board of directors and the board of directors of all its subsidiaries. Another example is provided by Majluf et al. (1998) who report that of the 141 board positions of holding companies in five Chilean groups, 121 positions (86 percent) are controlled by the corresponding group. Another relevant observation is the prevalence of large shareholders in Chile. Of the 245 listed firms on the *Bolsa de Comercio de Santiago*, 127 firms (52 percent) have a majority shareholder with more than a 50 percent stake in the firm in 2001. These numbers are actually under-representative if we fail to take into account coalition shareholders who as a group have a majority stake in the firm. Ultimate shareholder information also leads to an upward revision in the above numbers; family members through multiple investment vehicles that appear as separate shareholders indirectly control more than 50 percent of the shares of the firm in several instances. Such a high level of investment will encourage these shareholders to be actively involved in the monitoring if not the actual management of the firm. Such involvement will ensure that managers are not undertaking unnecessary risk. This reduction in the debt agency costs emanating from the incentive effects is expected to increase the firm's debt capacity.

*H1a: Family/owners-controlled firms will exhibit a higher level of leverage than non-family-controlled firms.*

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of the firm, etc.

The above argument that family firms have lower agency costs of debt can be extended to the analysis of the maturity structure of the debt of these firms. There are several factors that play a role in determining the mix of short-term and long-term debt. The literature approaches the subject from several different theoretical perspectives<sup>10</sup>. Of particular interest to this research is the approach that relates debt maturity choice to agency problems emanating from the incentive effects (Barnea, Haugen and Senbet, 1980). Given Black and Scholes' (1973) view that a levered firm is similar to a European call option with an exercise price equal to the face value of the debt, the holders of this option (shareholders of the firm) can increase its value by increasing the variance of the cash flows of the underlying assets. Thus, they will have the incentive to engage in high risk projects. Barnea, Haugen and Senbet (1980) argue that "the value of a shorter term option is less sensitive to a change in the variance in the distribution of returns to the underlying asset" (p. 1230). Thus, the use of debt with shorter maturity will help neutralize the risk incentive problem.

Ownership structure enters the picture through the effect it has on the incentive-related agency costs of debt. Surprisingly and to the best of my knowledge, ownership variables have not been presented in the literature as possible determinants of debt maturity. Only Scherr and Hulburt (2001) mention that small firms are characterized by a manager who happens to own the majority of the stock in a firm and who may have the incentive and power to invest in riskier projects. Conversely, the undiversified nature of

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<sup>10</sup> Megginson (1997) classifies theoretical models of debt maturity structure into contracting cost models and signaling models. The contracting cost models focus on the role that short-term debt can play in mitigating the under-investment problem (Myers, 1977) particularly when firms have a plethora of investment opportunities. Myer's analysis can be also extended to provide a theoretical justification for the "maturity matching hypothesis", whereby firms match the maturities of their assets and liabilities. Signaling models, on the other hand, (Flannery, 1986; Diamond, 1991; Goswami, Noe and Rebello, 1995)



the owner's portfolio may be a countervailing force to the above incentive. This mention, however, neither triggers any further explication as to how ownership may affect the maturity structure of debt, nor prompts the authors to include ownership as an explanatory variable in their empirical model. If families can play a role in mitigating the incentive effects and the corresponding agency costs of debt as postulated in the above section, then their presence may reduce the need for more short-term debt playing a role in incentive-problem reduction. Thus, family-controlled firms are expected to employ debt with longer maturities.

*H1b: Family/owners-controlled firms will exhibit a lower level of short-term debt relative to total debt than non-family-controlled firms.*

### *B. Business group structure*

Research on business groups has gained more popularity in the last two decades. Though the initial focus of most studies in this area has been the Japanese version of this organizational form (Berglöf and Perotti, 1994), recent years have marked interest in group structure in other countries such as Korea, India (Khanna and Palepu, 1999; Khanna and Palepu, 2000b), Mexico (Camp, 1989; Castañeda Ramos, 2000; Sargent, 2001; Sargent and Ghaddar, 2001) and Chile (Majluf et al., 1998; Del Villar et al., 1999; Claessens, Djankov and Klapper, 2000; Khanna and Rivkin, 2000; Khanna and Palepu, 2000a; Lefort and Walker, 2000; Sapelli, 2001) among others. The prevalence of this organizational form in so many countries renders defining them very difficult because of the multitude of cultural, institutional, and economic factors that may influence shaping

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focus on debt maturity as a signal that managers use to convey information to relatively uninformed investors.

them. Khanna and Rivkin (2001), based on their analysis of business groups in several countries, provide a general definition of a business group as “a set of firms which, though legally independent, are bound together by a constellation of formal and informal ties and are accustomed to taking coordinated action” (pp. 47-8).

Within Latin America, the industrial group structure is a dominant organizational form. Typically, industrial groups are large, diversified conglomerates organized within a holding company. They usually contain both manufacturing and financial companies. In Chile, groups represented around 91 percent of the total assets of non-financial firms<sup>11</sup> in 1998 (Lefort and Walker, 2000). The legal definition of a business group in Chile is the following:

A holding is a group of entities that display the kind of links in their ownership, administration, or credit liability that lead to a presumption that the economic and financial action of the members thereof is guided by the group’s common interest or is subordinate thereto, or that there are common financial risks in the credits granted to them, or in the acquisition of securities issued by them (Article 96, Title XV, Law 18045 Securities Market Law).

The visible configuration of a typical Chilean business group is a three-tier structure with investment companies owning the holding companies, which in turn own the subsidiaries (Majluf et al., 1998). A deeper analysis of this configuration reveals a fourth invisible tier representing family ownership of the investment companies at the top of the pyramid. The ties among group members are primarily defined by common

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<sup>11</sup> The firms included in Lefort and Walker’s (2000) study are non-financial firms registered with the *Superintendencia de Valores y Seguros*.

owners, indirect equity ties and director interlocks (Khanna and Rivkin, 2000). Of the 245 Chilean companies listed on the *Bolsa de Comercio de Santiago*, almost 40 percent of these firms were group members<sup>12</sup>. Table 4 presents the national (20 groups) and international (9 groups) business groups in Chile as of January 2001, and their lines of business. While most of these groups include financial companies, not all of them include a commercial bank. The groups that include commercial banks in their line of business are *Luksic, Matte, Said, and Saieh*.

Several reasons have been proposed as catalysts for the emergence of business groups in developing countries. Among these is the ability to overcome different imperfections whether in labor, product, and capital markets (Leff, 1976, 1978). Of particular relevance to this research is the role that groups can play in overcoming capital market inefficiencies. By forming into a group, firms can have better access to capital through inter group capital transfer or through access to credit based on the group's reputation (Khanna and Rivkin, 2001). Thus, one would expect firms that are group members to have better access to credit and to enjoy higher levels of leverage.

*H2a: Firms that are affiliated with a group will exhibit higher levels of leverage than non-affiliated firms.*

The presence of a bank within a group can foster strong relationships between group members. These close ties with banks help in obtaining information and preferential access to capital. This feature bears some resemblance to another organizational form, namely, the Japanese *keiretsu* form. Studies analyzing the Japanese *keiretsu* structure have found that the close relationship between a *keiretsu* firm and its

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<sup>12</sup> Based on group classification reported in *El Diario*, January 24, 2001 issue.

**Table 4**  
**Chilean Business Groups**

Panels A and B report national and international groups in Chile based on the classification reported in *El Diario*, January 24, 2001 issue. The group names set in bold are based on *El Diario*'s special supplement: "Resultados de grupos: Primer semestre 2002". The type of business information was extracted from the *Bolsa de Comercio de Santiago*, the *Económica* website, and various issues of *El Diario*, *Estrategia* and *Qué Pasa*. For international groups the 'type of business' information refers to the international groups' line of business within Chile only.

<i>Panel A: National Groups</i>		
<i>Group</i>	<i>Controlling Family</i>	<i>Type of Business</i>
<b>Angelini</b>	Angelini	Oil and gas, agriculture, investment, insurance, fishing, forestry, shipping.
<b>Matte</b>	Matte	Banking, investment and real estate, pulp and paper mills, electric power, construction, transportation services.
<b>Luksic</b>	Luksic	Banking, food and beverage, telecommunications, agriculture, hotels, metallurgy, mining, investment and real estate.
<b>Larrain</b>	Larrain, Vial	Financial services, food and beverage, furniture manufacturing, metal manufacturing, paint manufacturing.
<b>Claro</b>	Claro	Shipping, beverages, investment, metallurgy, glass manufacturing.
<b>Fernandez Leon</b>	Fernandez Leon	Investment and real estate, insurance, mining, banking.
<b>Hurtado Vicuña</b>	Hurtado Vicuña	Insurance, mining, investment and real estate.
<b>Said</b>	Said	Banking, investment and real estate, chemical products, food and beverage.
<b>Sigdo Koppers</b>		Chemical manufacturing, electrical product manufacturing.
<b>CGE</b>	Marín-Del Real, Almería, Pérez Cruz	Electric power, natural gas distribution, construction, investment.
<b>Saieh</b>	Saieh	Banking.
<b>Urenda</b>	Urenda	Transportation services, shipping.
<b>Galmez</b>	Galmez	Department stores, investment and real estate.
<b>Bofill</b>	Bofill	Food and beverage.
<b>Guilisasti</b>	Guilisasti	Beverages, agriculture.
<b>Del Río</b>	Del Río	Investment.
<b>Cuneo-Solari</b>	Cuneo, Solari	Investment and real estate, department stores, consumer credit.
<b>Paulmann</b>	Paulmann	Investment and real estate, consumer credit.
<b>Cueto</b>	Cueto	Air transportation.
<b>Penta</b>		Pension funds.
<i>Panel B: International Groups</i>		
<i>Group</i>	<i>Controlling Family</i>	<i>Type of Business</i>
<b>Endesa Espana</b>		Electric power.
<b>Telefonica Espana</b>		Telecommunications.
<b>Agbar</b>		Water and sewage systems.
<b>Suez</b>		Electric power, water and sewage systems.
<b>AES</b>		Electric power, investment, transportation services.
<b>PP&amp;L</b>		Electric power.
<b>SCH</b>		Banking, insurance, financial services.
<b>BBVA</b>		Banking and financial services.
<b>Telecom Italia</b>		Telecommunications.

main bank plays a very important role in alleviating the costs of financial distress (Hoshi, Kashyap and Scharfstein, 1991; Kim and Limpaphayom, 1998), and in reducing the informational asymmetries between creditors and shareholders (Kester, 1986; Berglöf and Perotti, 1994). Though the Chilean group structure does not contain the “main bank” feature (Khanna and Rivkin, 2000)<sup>13</sup>, the identification of a commercial bank within the group may reflect favored access to credit and may imply higher use of leverage. A closer examination of the groups with commercial bank members reveals that a considerable level of presence and control is maintained by the group. For example, *Banco BHIF*, a member of both *Grupo Said*<sup>14</sup> at the Chilean level and *Grupo BBV* at the international level, has the latter group as its major shareholder (55.52 percent), while its board of directors is controlled by the former, with José Said as Chairman of the board and his nephew, Jaime, as a director, both of whom sit on and control the boards of other firms in *Grupo Said*. *Banco Bice* within the *Matte* Group has three family members on its board of directors, one of whom is the Chairman. Needless to say, these members also sit on the boards of several firms within the group. Similar arrangements can also be traced within *Grupo Luksic* and its control of *Banco de Chile*. Thus, the following hypothesis reflects the fact that such common control may play a role in securing preferential access to credit.

*H2b: Group members whose group includes a bank will exhibit higher levels of leverage relative to group members whose group does not include a bank.*

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<sup>13</sup> The analysis of sample Chilean firms and groups supports Khanna and Rivkin’s (2000) observation. Based on analysis of the top ten shareholders, there was no evidence that banks directly or indirectly owned firms within a group. Majluf et al. (1998) also report that banks do not hold equity positions in Chilean companies (Table II, p. 115).

<sup>14</sup> *Grupo Said* controls 17.8 percent of the outstanding shares of *Banco BHIF*.

### *C. High agency costs of equity*

External financing in the form of equity may not be as easy to obtain as debt financing. This is the case because of the high agency costs of equity present in an environment with little legal protection for minority shareholders. The pecking order hypothesis (Donaldson, 1961; Myers, 1984; Myers and Majluf, 1984) provides the theoretical backdrop for such a conclusion.

The pecking order hypothesis posits that, under the assumptions of informational asymmetries and that managers act in the best interest of existing shareholders, a firm will follow a pecking order when financing an investment opportunity, drawing first from its retained earnings followed by the issuance of debt and as a last resort the issuance of equity. One of the many implications of this theory is that managers will avoid issuing equity when the shares of a firm are undervalued. Several studies provide empirical support to the notion that equity issues seem to cluster around periods of general price increases in the equity market (Lucas and McDonald, 1990). Thus, firms would avoid equity issuance when their stock is undervalued and will resort to other forms of financing, with debt as an important source when retained earnings do not suffice.

Within Latin America, the case for equity under-valuation stems from the legal and institutional framework within which firms operate. La Porta et al. (1998) examine investors' legal protection and law enforcement in 49 countries. The nine Latin American countries examined in their study fall under the category of French-civil-law countries. In their analysis, this category exhibits the weakest legal protection for shareholders and creditors, the lowest level of law enforcement and the lowest rating on accounting standards. After calculating La Porta et al.'s (1998) shareholder rights, creditor rights,

and law enforcement indicators for the subcategory of Latin American countries, these countries scored lower than the average for French-origin countries in the majority of the cases (See Tables B1-B3, Appendix B). Along similar lines, Nenova (2001) constructs an index reflecting investor protection measures during a takeover contest. Again, French tradition civil law countries have the lowest scores, with the three Latin American countries of Brazil, Chile and Mexico scoring a zero on that index (Table B4, Appendix B). Another interesting measure that reflects the extent of shareholder protection and the level of power awarded to dominant owners is Nenova's charter provision index. This index reflects the control protecting mechanisms available to the dominant shareholder/s. The presence of such mechanisms lowers the cost of control benefit extraction and decreases the likelihood of a control challenge. Not surprisingly, French tradition civil law countries report the highest scores (Table B4, Appendix B). It is worth noting that although Chile fairs considerably better than most French civil law countries in terms of shareholder and creditor protection, the quality of law enforcement nullifies those protections to a certain extent. Nenova's (2001) indicators also support the difficulty of control contests in cases of expropriation in Chile.

The above measures and indicators paint a very bleak picture for investors, especially minority shareholders within the Latin American legal and institutional environment. This lack of protection increases the probability of expropriation of minority shareholders by majority owners. The specter of such expropriation will lower the value of the firm (Claessens et al., 1999; Lins, 2003)<sup>15</sup> and will render equity issuance

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<sup>15</sup> Claessens et al. (1999) provide evidence of expropriation of minority shareholders in East Asia. In an environment where voting rights are separated from cash flow rights through the use of cross-holdings, pyramiding and dual-class shares, the authors report higher firm valuations with higher cash flow rights, and lower valuations in instances where control rights are concentrated. Leal et al. (2001) also report higher

into a costly endeavor. Controlling for the profitability of the firm, such an effect is expected to be more pronounced if a high level of informational asymmetries exists between the firm and its minority shareholders as well as in situations where cash flow rights are separated from control rights.

*H3: After controlling for a firm's profitability, firms with higher levels of informational asymmetries will exhibit higher levels of debt than firms with lower levels of informational asymmetries.*

#### *D. Avoidance of the governance role of debt*

Debt serves a very important role in constraining and disciplining managers. With the assumption of atomistic shareholders and in the presence of large amounts of free cash flow, managers may pursue non-positive net present value, empire-building projects (Jensen, 1986). “[F]inancing policies, by influencing the resources under management’s control, can reduce the costs of over- and under-investment” (Stulz, 1990). Hart and Moore (1995) also develop a model where long-term debt plays an important role in addressing the over-investment problem by self-interested managers. Managers interested in empire building projects will find it hard to raise funds for these projects when they have a high level of senior long-term debt.

Zweibel (1996) develops a model where managers employ debt specifically because of its governance role. By utilizing debt, managers can constrain themselves

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valuations for Brazilian firms when control is dispersed rather than concentrated. Such evidence is consistent with theoretical models suggesting that firm value is positively related to the fraction of the voting rights controlled by management when these fractions are low, and negatively related at high levels of voting rights (Stulz (1988); Morck, Shleifer and Vishny (1988)). Lins (2003), in his analysis of ownership structures and firm value in 22 emerging markets, reports lower valuations in cases where the management group and their families use mechanisms that uncouple their cash flow rights from their control rights. Such lower valuations are more pronounced in countries with low shareholder protection.



from pursuing empire-building projects in an attempt to avert takeover and loss of control. Thus, the use of debt becomes the “the optimal response ... of partially entrenched managers trading-off empire-building ambitions with the need to ensure sufficient efficiency to prevent control challenges” (p. 1197). It is worth noting, however, that such a decision by management is undertaken with the assumption of an effective market for corporate control. In the absence of such a market, entrenched managers would not have the incentive to constrain themselves since they are assured of their control. Berger, Ofek and Yermack (1997) provide empirical evidence to this end. Their results reveal that entrenched CEOs of large U.S. industrial corporations avoid the use of debt. Leverage was significantly lower when the CEO had a long tenure in office and a compensation package with low sensitivity to performance, when the board of directors was large and had a low fraction of outside directors, and when the firm had no major stockholder. Harvey, Lins and Roper (2002) further ascertain the governance role of debt by finding evidence that debt creates shareholder value in the cases where agency costs are high (the case of emerging markets<sup>16</sup>) and where the particular type of debt used is that which closely monitors management.

The Latin American managerial scene possesses characteristics that are very similar to the scenario of an entrenched CEO in developed countries. Takeover threats are very small given the weak, if not non-existent markets for corporate control (Husted and Serrano, 2001). Boards of directors represent more the interests of managers/owners than other shareholders, in particular, minority shareholders. In many instances, members of the board of directors are members of the same family as the managers. These features

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<sup>16</sup> Agency costs are high in emerging markets because of the different techniques utilized to separate ownership from control (Claessens et al., 2000, 2002). This is further aggravated by low levels of

accompanied by weak protection of minority shareholders and low levels of law enforcement open the door wide for private benefits of control, especially when the firm has an abundance of free cash flow and few investment opportunities. The utilization of debt under such a scenario will jeopardize the extraction of such benefits. Thus,

*H4: Family firms with free cash flow and low investment opportunities will use less debt than family firms with no free cash flow.*

#### *E. Avoidance of bankruptcy and financial distress costs*

One of the main costs of debt stems from the increased probability of bankruptcy as higher levels of debt are utilized (Jensen and Meckling, 1976). The more debt, the higher the probability of bankruptcy, and the more the owner/manager stands to lose the more his or her future income is tied to the future survival of the firm (Amihud and Lev, 1981; Agrawal and Mandelker, 1987)<sup>17</sup>. Bankruptcy costs can be direct and/or indirect. Direct bankruptcy costs are “out-of-pocket cash expenses directly related to bankruptcy filing and administration” (Megginson, 1997: 333). Indirect costs include, but are not limited to, weakened competitiveness, lost sales, lower capital investment and R&D spending, loss of key employees, etc. While arguments can be made that the direct costs are negligible especially in the case of larger firms (Warner, 1977; Ang et al., 1982), the indirect costs are quite significant (Altman, 1984; Lang and Stulz, 1992; Opler and Titman, 1994). Several firm characteristics contribute to the accentuation of these costs. Firms with high levels of business risk are more likely to default and, thus, have a higher probability of financial distress with its ensuing costs. A firm’s asset characteristics also

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protection for minority shareholders and low levels of law enforcement (La Porta et al., 1998).

influence the likelihood and costs of bankruptcy. Assets that are intangible in nature and with no well-established secondary markets contribute to higher financial distress costs. Furthermore, the possibility of financial distress has far more serious consequences in a closely-held firm than in an atomistic firm. Bankruptcy is more costly in high ownership concentration situations because of the lack of diversification on the part of owners/managers. Given the high levels of ownership concentration present in Chilean firms one would expect that:

*H5: Family-controlled firms with higher levels of business risk will utilize less debt than lower-risk family firms.*

#### *F. Alternative mechanisms to avoid ownership dilution*

Debt can play a role in overcoming the wealth constraints of the owners without the cost of ownership dilution associated with equity issuance. Thus, alternative mechanisms possessing similar advantages to debt in that respect may play an important role in moderating a hypothesized positive relationship between debt and family ownership based on the above arguments of control. Such alternative mechanisms include the use of dual-class shares and pyramiding, both of which uncouple cash flow rights from control rights. Cash flow rights will typically be less than control rights under these scenarios.

Dual class shares involve the issuance of shares with no voting rights or some form of restricted voting rights. Such differential voting rights allow an entrepreneur to maintain control of the firm with less than majority ownership. Within the Latin

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<sup>17</sup> Such a result is largely dependent on the composition of the manager's wealth portfolio. For a more detailed exposition of this point, see Agrawal and Mandelker (1987).

American context, the use of this type of shares has been well documented in the literature. Nenova (2001) reports the existence of dual class shares in Brazil, Chile and Mexico<sup>18</sup>. Furthermore, Leal et al. (2001) and Lins (2000) confirm the frequent use of non-voting shares in Brazil. A preliminary analysis of Chilean companies reveals the existence of 20 multiple-class firms that are listed on the *Bolsa de Comercio de Santiago*<sup>19</sup>. Upon closer investigation of the voting privileges associated with each type of shares issued by these firms, the presence of dual class shares in Chile did not seem to necessarily reflect a deviation from the one-share, one-vote rule. Though a comprehensive analysis of all dual-class firms was not feasible due to data limitations, the few companies with information on the different privileges assigned to their multiple classes of shares can help draw the following general conclusions (Table B5, Appendix B). First, different classes of shares do not necessarily reflect preferential voting rights. Even when they do, the less-privileged class either represents a very small fraction of total voting rights or more or less represents the same owners. Second, different classes of shares usually have different managerial control implications. In almost all the cases, one class has the right to appoint the preponderant number of directors to the Board. Last, the class with inferior board-of-directors election privileges often has higher dividend payouts. Given the above observations, dual class shares within the Chilean context do not seem to serve the primary purpose of uncoupling cash flow and control rights, and

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<sup>18</sup> One of Nenova's criterion for inclusion in her sample was that the firm "has at least two publicly traded classes of stock with different voting rights per cash flow rights" (p. 24).

<sup>19</sup> This contradicts La Porta et al.'s (1998) decision to categorize Chile and Brazil as countries with "one share-one vote" rule. La Porta et al. (1998) establish the presence of a one share-one vote rule if none of the following practices are allowed by law: issuance of "non-voting shares, low- and high-voting shares, founders' shares with extremely high voting rights, or shares whose votes increase when they are held longer", and the presence of restrictions on "the total number of votes that any given shareholder can exercise at a shareholders' meeting, regardless of how many votes he or she controls" (p. 1127).

thus, are not expected to serve as an alternative mechanism to debt in order to maintain control of the firm.

*H6a: Family-controlled firms with dual class shares will exhibit similar levels of leverage as firms with single-class shares.*

The second mechanism that separates cash flow rights from control rights involves the utilization of pyramiding structures that aid in the maintenance of effective control in a firm with less than majority ownership. This can be achieved through a chain of less-than-100% ownership of one firm by another. From a theoretical perspective, the use of a pyramid is more likely in countries with poor investor protection (Wolfenzon, 1999). Empirically, extensive use of these structures has been confirmed in many countries around the world. Lins (2000) reports that two thirds of his emerging markets sample firms employ pyramidal structures. Claessens, Djankov and Lang (2000) confirm the use of such structures in their sample of East Asian corporations especially among family-controlled and small firms. The separation of control rights from cash flow rights through the use of pyramiding structures has been shown to adversely affect the value of the firm (Claessens et al., 2002; Lins, 2003; Lemmon and Lins, 2003). Given that pyramiding serves an important control function, it is expected to be used as a substitute for debt as a control mechanism and thus a negative relationship is expected to be found between debt and the use of pyramiding especially among family firms.

*H6b: Family-controlled firms with extensive pyramiding structures will exhibit lower levels of leverage than family firms without such structures.*

## CHAPTER IV

### DATA AND METHODOLOGY

#### *A. Data*

The *Económica* database is the main source utilized to obtain financial statement and top twelve shareholder information for Chilean listed companies<sup>20</sup>. The database also includes company announcements (dividends, acquisitions, shareholder meetings, etc.) reported in the press. The Chilean stock exchange, *Bolsa de Comercio de Santiago* also provides ownership data of each listed firm, as well as abbreviated financial statements, some key financial ratios, and the permanent investments (subsidiaries) of each corporation. It was primarily consulted for the subsidiaries information and for crosschecking purposes whenever ambiguities arose. The group membership data was extracted from several issues of Chilean business magazines and newspapers, in particular, *El Diario*, *Qué Pasa*, and *Estrategia*<sup>21</sup>. To track down ultimate ownership data, several sources were consulted: company websites, annual reports, Forms 20-F, *Económica* news briefings, and the above-mentioned business magazines

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<sup>20</sup> General rule No. 30 of the SVS requires each firm to identify the twelve largest shareholders.

<sup>21</sup> *Estrategia* is a daily business newspaper; *El Diario* Internet is a website with Chilean and world business news; *Qué Pasa* is a weekly magazine with political, business, sports and society news.

and newspapers. The *Feller-Rate*<sup>22</sup> reports also provided indispensable information regarding ultimate owners and individuals associated with investment companies. Board-of-directors information for 2000 and 2001 was obtained from *Fecu (Ficha Estadística Codificada Uniforme)*. *Fecu* is a data collection agency in Chile whose data is directly extracted from company filings with the *Superintendencia de Valores y Seguros de Chile (SVS)*, the equivalent of the Securities Exchange Commission in the U.S.

The initial sample included all 245 listed firms on the *Bolsa de Comercio de Santiago* as of January 2002. The *Económica* database has 317 entries for Chilean corporations encompassing all these firms, including multiple entries for the same company if it has dual or ADR shares, as well as entries for firms previously delisted. All cancelled stocks as of December 2001 were deleted. Also firms in the following economic sectors were removed from the sample due to the marked differences in leverage and corporate governance between these industries and other sectors of the economy: Banks and Finance, Funds, Electric Power, Oil and Gas, Telecommunication, and Other<sup>23</sup>. Other exclusions pertained to state participation, ambiguities, and multiple entries (ADR, different classes)<sup>24</sup>.

The final sample included 102 firms in the following industries: Agriculture (18 firms), Basic and Fabricated Metal (8), Chemical (9), Construction (2), Food and Beverage (16), Mining (4), Non-metallic Min (6), Pulp and Paper (2), Textile (6), Trade (16), Transportation Services (8), and Other (7).

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<sup>22</sup> *Feller-Rate* is a Chilean risk rating agency and is a strategic affiliate of Standard and Poor's.

<sup>23</sup> The "other" category in the *Económica* database referred mostly to firms in the "*inversiones e inmobiliarias*" (investment and real estate) industry class according to the *Bolsa de Santiago's* classification. However, there were seven firms that were retained because they were in non-financial sectors based on the *Bolsa's* classification. Checking the individual companies' websites further confirmed the decision to include these firms in the analysis.

<sup>24</sup> See Appendix A (section A) for a more detailed depiction of sample construction.

The sample utilized in this analysis is among the larger Chilean samples of listed companies<sup>25</sup> covered in the literature. Lins (2003)<sup>26</sup> uses 56 non-financial firms in his Chilean sample. Khanna and Palepu (2000a) employ 114 firms including financial and utilities. Claessens, Djankov and Klapper (2000) have 55 firms in their Chilean sample. The only exception is Khanna and Rivkin (2000) who start out with 457 firms that were “publicly traded” on the Santiago stock exchange in 1997<sup>27</sup>.

Consolidated as well as non-consolidated financial statement data was retrieved from the *Economática* database for year-end 2000 and 2001<sup>28</sup>. Missing data were filled by consulting with the financial information published on the *Bolsa de Comercio*’s website, *Economática*’s adjacent quarter information, and *Fecu*<sup>29</sup>.

The decision to conduct the analysis using both consolidated and non-consolidated data was motivated by the advantages and disadvantages of each type of data. While consolidated data has some superior qualities and may better reflect the financial status of a company as a whole, the main disadvantage of this type of data is the reduction in the sample size. Of the 102 sample firms, 14 firms are subsidiaries of other sample firms<sup>30</sup> and, thus, their financial data was consolidated with that of the parent.

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<sup>25</sup> Lefort and Walker (2000) use a larger number of firms, specifically 162, 252, and 195 non-financial firms for 1990, 1994, and 1998, respectively. However, their study does not encompass the universe of listed companies but rather the universe of registered firms at the *Superintendencia de Seguros y Valores (SVS)*.

<sup>26</sup> Personal communication with Professor Lins revealed that his Chilean sample with ultimate ownership data did not exceed 15 firms.

<sup>27</sup> Based on my prior research on Chilean firms, the *Bolsa de Comercio* had 296 listed firms in 1997. Personal contact with *Fecu* administrators revealed that there are currently 417 registered Chilean companies, of which only 245 are listed on the *Bolsa de Comercio*.

<sup>28</sup> Although the *Economática* database has data on Chilean firms dating back to 1991, several reasons precluded the use of data prior to 2000. First, missing data is very prominent in those years seriously affecting the sample size. Second, I do not have access to other sources of data corresponding to those dates. Thus, the missing values issue cannot be rectified. Third, I do not have access to board of directors information in prior years. This seriously hinders the development of one of the ownership variables.

<sup>29</sup> See Appendix A (section B) for detailed information regarding the values substituted for missing values.

<sup>30</sup> See Appendix A (section C) for subsidiary identification criteria.



Another shortcoming of using consolidated data is that such data was not available for all sample firms. There were 13 sample firms<sup>31</sup> for which the non-consolidated values were substituted for the consolidated figures. However, this problem is mitigated by the fact that 10 of these firms did not report any subsidiaries in the “permanent investments section” on the *Bolsa*’s website. Thus, the filling-in of non-consolidated data for the consolidated values does not necessarily lead to serious distortions. Among the main disadvantages of non-consolidated data is that, in several instances, the listed company is only an investment/holding that coordinates the activities of the subsidiaries. The actual operations of the firm are usually concentrated in one subsidiary that has a variation of the holding’s name. These holdings usually have a zero or a very low level of fixed assets, and their industry classification reflects more the industry within which its main subsidiary operates. Examples include but are not limited to *Industrias Alimenticias Carozzi* whose main subsidiary is *Empresas Carozzi*, and *Empresas Almacenes Paris* whose main subsidiary is *Alamcenes Paris Comercial*. Thus, the non-consolidated figures in such instances reflect only the shell and fail to portray the whole financial picture of a company.

### *B. Methodology and Variables*

The empirical analysis utilizes univariate as well as multivariate tests of the impact that family ownership may have on the financing policy of a firm. The univariate tests will employ *t*-tests for examining the differences in means between family and non-family firms for several financial variables of interest. The multivariate tests will utilize a

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<sup>31</sup> Firms for which consolidated data was not available are: *Cadena*, *Carampang*, *Comviña*, *Cordillera*, *Emiliana\**, *Jucosa*, *Muelles*, *Pucobre*, *Sabimet*, *Schwager*, *Somela\**, *Tamaya*, and *Viconto\**. Firms marked

cross-sectional regression model with different specifications, each of which employs the different variables that will aid in testing the specific hypothesis. The models will also include control variables that have been shown in the literature to influence capital structure decisions. The multiple regression model represents the traditional methodology utilized by classical capital structure studies (Bradley, Jarrell and Kim, 1984; Rajan and Zingales, 1995; Booth et al., 2001) as well as other studies focusing on understanding the relationship between ownership and leverage variables (Friend and Hasbrouck, 1988; Kim and Sorensen, 1986; Berger, Ofek and Yermack, 1997; Wiwattanakantang, 1999; Short, Keasey and Duxbury, 2002).

#### Dependent variable: Leverage

Studies investigating the capital structure of the firm have utilized different measures of leverage. Among the most commonly used ones are: total book-debt ratio measured as total liabilities divided by total liabilities and networth (Wiwattanakantang, 1999; Booth et al. 2001); long-term book-debt ratio calculated as long-term liabilities divided by long-term liabilities plus networth (Friend and Hasbrouck, 1988; Booth et al., 2001); long-term market-debt ratio measured as long-term liabilities divided by long-term liabilities plus average equity market value (Bradley, Jarrell and Kim, 1984; Booth et al. 2001); book value of long-term debt to market value of equity (Bathala et al., 1994); total liabilities to assets ratio (Chauvin and Hirschey, 1996; Lins, 2003); and total debt-to-assets ratio (Berger, Ofek and Yermack, 1997; Harvey, Lins and Roper, 2002). Two measures of leverage will be used in this study. The first measure is the ratio of total debt to total assets, where total debt is the sum of long-term debt, short-term debt, and the

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with an asterisk have reported the presence of subsidiaries.

current portion of long-term debt<sup>32</sup>. The second measure is the ratio of long-term liabilities to total assets<sup>33</sup>. To measure debt maturity I use the ratio of short-term debt to total debt. This specification, as opposed to the ratio of short-term or long-term debt to total assets, separates the debt maturity decision from the leverage decision (Barclay and Smith, 1995)<sup>34</sup>.

## Independent Variables

### Ownership variables

Several variables are utilized to portray the multiple dimensions of the ownership structure of Chilean corporations.

#### *Ownership concentration*

Several variables are used in the literature to proxy for the level of ownership concentration within a firm. One variable that has stood out in recent years is the Herfindahl index (HI). This index is a concentration measure that has gained more

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<sup>32</sup> The above items correspond to the following: *obligaciones con bancos e instituciones financieras*, *obligaciones con bancos e instituciones financieras a corto plazo*, and *obligaciones con bancos e instituciones financieras - porcion corto plazo*.

<sup>33</sup> Long-term liabilities include the long-term debt portion plus the following items: *obligaciones con el público largo plazo (bonos)* (long-term bonds), *documentos por pagar largo plazo* (long-term notes payable), *acreedores varios largo plazo* (miscellaneous long-term payables), *documentos y cuentas por pagar empresas relacionadas largo plazo* (long-term payables due to related companies), *provisiones largo plazo* (long-term provisions), *impuestos diferidos a largo plazo* (deferred taxes - long-term), *otros pasivos a largo plazo* (other long-term liabilities).

<sup>34</sup> All of the above leverage measures are book-value based as opposed to the more prevalent practice of market-based figures. However, the use of book values in this study is not completely outlandish. First, the use of market values in Chile may not be optimal since market liquidity is not very high. On average, listed firms traded 34 percent of the trading days. It is also estimated that, in 2001, fewer than 11 percent of listed companies on the *Bolsa de Comercio de Santiago* had their shares traded for 90 percent or more of the *Bolsa's* trading days (2001 20-F report of *Embotelladora Andina, S. A.*). Such low figures bring into question market efficiency concerns and, thus, the validity of reported market values as representative of actual firm value. Furthermore, several studies utilize book values of debt rather than market values because they "capture conscious financing decisions and not recent market re-evaluations of the firm's growth prospects" (Nilsson, 2002: 9). Thus, market values may have "low power to detect the debt capacity of growth options" (Harvey, Lins and Roper, 2002: 9).

popularity as a gauge of ownership concentration (Demsetz and Lehn, 1985; Santerre and Neun, 1986; Lins, 2000; Nenova, 2001) due to its ability to take into account both the inequality of shares among stockholders as well as the number of stockholders. It is usually calculated as the sum of squares of the shareholdings of a certain number of stockholders<sup>35</sup>. Though this index does capture extremely high levels of ownership concentration within Chile<sup>36</sup>, deeper analysis of the relationships among the different blockholders reveals that this variable may actually underestimate the actual level of ownership concentration. For example, while the top five shareholders of *Empresas CMPC* in 2001 owned 19.49, 19.07, 6.9, 4.03, and 3.89 percent of shares resulting in an HI measure of 8.23, deeper analysis revealed that four of the five top shareholders were mere investment vehicles or corporations ultimately owned by the *Matte* family. Taking into account that the *Matte* family constitutes the largest shareholder in the firm with 56 percent ownership of shares and that the next four shareholders have holdings ranging from 3.89 to 1.65 percent, the new HI value is 31.6. Another example is *Enaex* and *CTI*, both of which are members of the *Sigdo Koppers* Group. Their indices are 7.31 and 5.72 respectively. However, analysis of the ownership dynamics of this group reveals that it is constituted of a coalition of seven individuals who have equal share ownership that is less than 10 percent in each of the above firms. However, collectively, they control 50.1

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<sup>35</sup> Demsetz and Lehn calculate the Herfindahl index as the sum of squares of the shareholdings of the top 20 stockholders. Lins (2000) calculates the Herfindahl index as the sum of squared blockholdings, where a blockholding is defined as portion of shares exceeding five percent. This calculation allows the measurement to place a "higher value on larger and fewer (i.e. more concentrated blockholdings)" for a given total ownership level. Nenova (2001) measures the Herfindahl index as the sum of squares of the top five shareholdings. This study adopts this latter calculation methodology. No discrepancy is expected between this method and Lins's calculation method since his definition of a blockholding fits the top five shareholdings in the majority of sample firms.

<sup>36</sup> Sample firms have a mean index of 36.59. Compared to the indices calculated by Lins (2000) for firms from 22 different emerging markets, this value is the third highest after Brazil's (46) and Peru's (44). The values for Lins's samples range from 5 to 46 and have a mean of 21.

percent of *Enaex* and 44.5 percent of *CTI*. The ownership structure of *Cristales* further adds to the list of misrepresentations when it comes to the percentage holdings of the top shareholders. Although the firm does not appear to have a majority shareholder, majority control of the firm is in effect through the ownership of three members of the *ElecMetal* Group (also known as *Grupo Claro*), with 34.03, 9.24, and 8.87 percent ownership. Examples like this abound.

Another reason that may lead to distortions in the Herfindahl index is the holdings of the *Deposito Central de Valores* (DCV)<sup>37</sup>. While the total holdings of this institution may amount to a considerable block of shares (60 percent of *SQM*, 34 percent of *Cristales*, etc.), such blocks represent multiple smaller holdings of the *Administradoras de Fondos de Pensiones* (AFPs)<sup>38</sup>, the private pension institutions in Chile. Furthermore, there is some inconsistency in the reporting of DCV holdings from one year to the next. For example, for the company *Cap, Económica* and the Chilean *Bolsa* report the AFPs' holdings in 2001 under the DCV, pushing this entity to the top shareholder position with a 29 percent share ownership. For 2000, AFPs' holdings are reported separately as multiple small blocks never exceeding 6 percent. This results in a considerable discrepancy in the calculation of the H-index (17 in 2001 versus 9 in 2000) at a time when ownership fundamentals did not change between the two dates. The above reasons lead one to believe that the Herfindahl index does not fully capture the intricacies of ownership within Chile and, thus cannot be relied upon solely as an ownership variable. Such deficiencies necessitate deeper analysis of the ownership structure of Chilean

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<sup>37</sup> The DCV is a securities depository that provides an "inventory accounts" service to pension funds among other institutions.

corporations and the advent of measures that more accurately reflect the pattern and configuration of such ownership.

*Family ownership/control*

Several variables are used to reflect multiple levels of involvement of the family or coalition of individuals controlling the firm. The first task in measuring these variables was the identification of such an entity whose ultimate control of the firm was achieved through one or more of the following: majority ownership of the firm either directly or indirectly, multiple vehicles of common ownership, control of the board of directors, and certain agreements<sup>39</sup> that coordinated the actions and decisions of a group of shareholders. To aid in the identification process, the individual websites of the sample companies were reviewed (examination of company history, annual reports, forms 20-F, and board of directors information) when available. Also, magazines, newspapers, group membership information, and risk-rating-agency reports were consulted. Once a decision was reached concerning the presence of a controlling family or coalition of individuals<sup>40</sup>, a dummy variable (FAMILY) was set equal to one when such an entity was present and equal to zero when it was absent. The next variable reflects the family control rights (FCR), i.e., the sum of share ownership by the controlling family, shareholders known to be owned by the controlling family, as well as shareholders who have entered into agreements with that family. In a sense, this variable becomes a more appropriate measure of ownership concentration than the more traditional measures (the Herfindahl

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<sup>38</sup> This conclusion has been reached based on the comparison of ownership data in the *Económica* database and the Chilean *Bolsa* on the one hand and individual company websites on the other. Where such comparison was feasible, analysis revealed that DCV holdings corresponded to the sum of AFP holdings.

<sup>39</sup> In several instances, I came across information indicating the existence of such agreements: *Pacto Accion Conjunta y Gobernabilidad* and *Pacto de Venta Conjunta de Acciones*.

<sup>40</sup> The term 'family' will be used hereafter to represent family as well as any coalition of individuals forming a controlling group of the firm.

index, the percentage of shares held by the largest shareholder (S1), the three largest shareholders, the five largest shareholders or the largest 10 shareholders). In particular, if one considers and compares FCR to the percentage of shares held by the largest shareholder (generally assumed to be the controlling shareholder), it can be noticed that S1 underestimates the level of control exercised by this shareholder. Among family sample firms, the mean top shareholder ownership (S1) is 48.5 percent, while that number jumps to almost 60 percent once we take into account ownership by related parties.

Next, the level of control the family has over the board of directors (BOARD) is evaluated. It is measured as the number of board seats held by that family/coalition in relation to the total number of board seats. The board of directors information was retrieved from company websites, annual reports, Form 20-Fs as well as the June 2001 and December 2000 board of directors information obtained from *Fecu*. The level of control that the family exerts over the board of directors may reflect the actual involvement of the family in the management of the firm and, thus, may suggest lower agency costs of debt, in which case higher levels of such control will be expected to impact positively the level of debt employed by the firm.

The following two variables represent the extent of cash flow and control rights separation utilized by the controlling family. The first one (INDIRECT) is a dummy variable indicating whether family ownership takes a direct (0) or an indirect (1) form. The direct/indirect distinction is slightly different from the definitions utilized in the literature. Finance research generally defines direct ownership as one where a person/entity through no other medium directly owns shares in a firm. In this study, direct

ownership is defined as one where an investment company known to be directly controlled by the family, directly owns shares in the firm. This definition is chosen because in almost all Chilean firms these investment companies represent the vehicle for ownership by individuals. Indirect ownership is indicated when more than one investment/manufacturing company is between the firm and the individuals. Thus, this variable becomes more a reflection of the degree of complexity of the utilized pyramiding structure, with firms reporting direct ownership portraying a simpler structure than those reporting an indirect value. The second variable portraying the degree of separation of cash flow and control rights is a continuous variable measuring the actual degree of such deviation. The literature primarily reports two approaches to measuring such deviation. The first one is the Claessens, Djankov and Lang (2000) and Claessens, Djankov, Fan and Lang (1999, 2002) approach which focuses on measuring the control and cash flow rights of the largest shareholder. Here cash flow rights are calculated as the product of ownership stakes along the complete chain of ownership, while control rights are set equal to the weakest link in that chain, and with the difference between the two accounting for the level of separation of ownership and control<sup>41</sup>. The main shortcoming of applying the Claessens approach to the Chilean context is that it focuses on the cash flow and control rights of the largest shareholder. In contrast, this analysis brings together the holdings of the controlling family/coalition as an aggregate. Thus, considering only the largest shareholder underestimates the above rights in the Chilean case, since multiple owners of the firm do not necessarily indicate different owners. Even if one were to

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<sup>41</sup> The example provided in Claessens et al. (2002) is the following: Suppose that a family owns 11 percent of the stock of publicly traded firm A, which in turn has 21 percent of the stock of firm B. The family is said to own 2 percent of the cash flow rights of B ( $21 \cdot 11$ ), and 11 percent of the control rights of B (the weakest link in the chain of control rights).



consider the holdings of the family as a whole, identifying the “weakest link” becomes problematic in the presence of multiple chains of ownership. The second approach is that of Lins (2003). Lins focuses on the holdings of the management group which may comprise persons listed as “CEO, CFO, President, or any other officer or director of the company; Executive, Deputy or Honorary Chairman; Treasurer or General Manager; and their family members (based on overlapping surnames)” (p. 6). He defines control rights as “the sum of direct block ownership and indirect control blocks held by managers and their families” (p. 8), where the indirect control blocks refer to direct holdings by firms identified as controlled by the management group. In other words, the control rights are direct (first-level) ownership of the entities identified as part of the management group. Cash flow rights, on the other hand, are computed in a manner similar to Claessens et al. as the product of ownership stakes along the complete chain of ownership. The separation between control and ownership is then calculated as the ratio of control rights to cash flow rights or what Lins terms as “cash flow leverage”, a measure that captures the ability of management to transform one unit of cash investment in the firm into multiple units of control. Lins’s (2003) approach is utilized here to measure that separation with a slight modification. While Lins does take into account multiple owners related to the management group, he accounts for this multiplicity only in the calculation of control rights. When obtaining cash flow rights, only the largest channel of ownership is consulted (based on the calculations he provides in Figure 1). Thus, his approach underestimates the cash flow rights and overestimates the cash flow rights leverage. In contrast, I account for cash flow rights through multiple channels. An example of a relatively simple pyramiding structure and the corresponding calculations is that of

*Empresa Pesquera Eperva* (Figure B2). *Inversiones Topocalma*, *AntarChile*, *Villa Careno*, *Inversiones Maltesa*, and *Inversiones Angelini* appear as five different shareholders of the company with 24.45, 18.36, 2.94, 2.87 and 2.34 percent share ownership respectively at a time when these firms are all ultimately controlled by the *Angelini* family<sup>42</sup> leading to a 50.96 percent control of the firm. I further take into account that another two shareholders, *Jean Pierre Corporation* (7.47 percent) and *Yolab Investment Corporation* (2.46 percent), have a “*pacto de actuación*” with the *Angelini* group raising the control of the firm up to 60.89 percent. Calculating cash flow rights through the *Inversiones Topocalma* route results in a 15.69 percent figure ( $.64 * 24.45$ ), while taking into consideration other related shareholders increases the cash flow rights up to 26.92 percent<sup>43</sup>. Calculating the cash flow leverage *à la* Lins gives a 3.25 value ( $50.96/15.69$ ), while my approach results in a 2.26 value ( $60.89/26.92$ )<sup>44</sup>.

Another dimension of family control is having a family member hold the CEO position of a firm. This fact may reflect a higher value that is placed on controlling the

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<sup>42</sup> The head of the *Angelini* family owns 51.46 percent of *Inversiones Angelini*. Three family members own 64.16 percent of *Inversiones Topocalma*. Both investment companies have share ownership in *AntarChile* (20.24 and 30.08 percent, respectively) and *Villa Careno* (27.33 and 72.67, respectively), while *Inversiones Maltesa* is owned by *Inversiones Topocalma* (53.8 percent) and the head of the *Angelini* family (46.2 percent).

<sup>43</sup> Detailed calculations available upon request.

<sup>44</sup> It has to be noted that the results based on the latter two variables (INDIRECT and cash flow leverage) need to be considered with care. Given the limitations and complications of determining ultimate ownership within Chilean corporations, the calculation of the above two measures has been based on some assumptions regarding the patterns of ownership within Chile. Such assumptions are founded on the deep and thorough analysis that I have conducted for Chilean firms and based on which I was able to detect some patterns that are, in my opinion, representative of the ownership structures in that country. In many instances, such assumptions have been confirmed upon stumbling on bits and pieces of information in electronic media sources. Furthermore, the cash flow leverage variable may be underestimated, since in several instances I was unable to get to the actual final ownership of an individual in an investment company. My sources simply led me to reach the conclusion that the individual controlled that final investment company without specific information regarding the investment of the individual in that firm. In such instances, a 100 percent ownership was assumed, an assumption that would result in an overestimation of the cash flow rights measure and an underestimation of the actual level of separation of ownership and control. However, this underestimation should bias the results toward detecting no significance, and, thus, in the case where significance is detected, the conclusions of the analysis should hold.

firm, and, consequently, may be associated with higher levels of debt that may be resorted to in order to maintain that control. It may also reflect a higher level of involvement of the family in the management of the firm, again leading to higher levels of leverage because of a possible reduction in the agency costs of debt. To measure this, a dummy variable (CEO) is set equal to one if a family/coalition member holds the CEO position and zero otherwise.

### *Institutional ownership*

Institutions are considered among the main type of external blockholders that might play an important role in agency problem reduction. Given a sizable investment in the firm, such external shareholders may have more incentives to monitor management than atomistic shareholders. This 'active monitoring hypothesis' (Shleifer and Vishny, 1986) implies lower agency costs of debt and, therefore, higher debt ratios. Such a result can also be driven by the higher level of diversification of institutional investors and their subsequent lower aversion to the employment of debt. In Chile, institutional ownership is mostly represented by the holdings of the private pension system, *Administradoras de Fondos de Pensiones* (AFPs). In some cases such holdings are clearly listed among the top 12 shareholders. However, in the majority of the cases, such holdings are bundled up together under the holdings of the *Deposito Central de Valores* (DCV). To proxy for institutional ownership, three variables are used: two dummy variables (DCV5 and DCV10) and a continuous variable (DCV). The two dummies are set equal to one if DCV holdings exceed five percent and 10 percent respectively, while DCV reflects actual share of DCV holdings. It is expected that the presence of such blockholdings will be associated with higher levels of debt.

### *Majority control*

Though the common identification of a majority shareholder within the firm involves looking at whether the top shareholder owns more than 50 percent of the shares of the firm, a different approach was adopted in this case for the following reasons. First, majority control of a firm can be maintained through multiple owners all ultimately related to the same family or group. For example, *Duncan Fox*, through an examination of the top ten shareholders, seems like a firm with no controlling shareholder – each investment company owns from three to 12 percent of shares. However, further investigation reveals that six of these ten shareholders are related to the same family resulting in a 62 percent control of that firm by the *LeCaros Menéndez* family. Second, the DCV appears in some cases as a majority shareholder (60 percent of SQM) when in fact it only reflects multiple holdings by AFPs. The above reasons dictate that a different method at identifying majority ownership be adopted. Thus, the dummy MAJOR is set equal to one if a family or group of individuals establish majority ownership of a firm through one or more investment vehicles that ultimately pertain to that group or through a contractual agreement to establish such control<sup>45</sup>. According to this definition of majority ownership 70 of the 98 sample firms (71 percent) for which such information was traceable had majority shareholder. This is in contrast to the 47 percent majority ownership (48 of 102 sample firms) when the conventional definition is used.

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<sup>45</sup> An example of such agreements is that between *Duncan Fox* and *Sipsa* to maintain majority ownership in *Coloso* (30.51 and 24.9 percent respectively). Evidence on the effectiveness of such contracts can be detected through ties between the two firms (the two companies are controlled by two branches of the Menéndez family) and outcomes of future ownership changes (in June of 2002 *Sipsa* decided to pull out of the fishing business, so it sold its shares in *Coloso* to *Duncan Fox* helping the latter achieve actual control of the firm).

### *Foreign ownership*

The presence of a foreign blockholder may indicate better access to other sources of capital. A dummy variable that takes the value of one if foreign ownership in a firm exceeds 10 percent and zero otherwise is used<sup>46</sup>.

### Capital structure determinants and control variables

#### *Taxes*

One of the main advantages of debt financing stems from the tax treatment of interest expense. Absent bankruptcy costs, Modigliani and Miller (1963) arrive at the conclusion of a 100 percent use of debt in a firm's capital structure. The corporate tax advantage of debt will, thus, lead to a positive relationship between the marginal tax rate of the firm and leverage. Given that Chilean tax laws, in a manner similar to U.S. treatment of interest expense, allow for the deductibility of interest for tax purposes, such a positive relationship is expected to be observed using Chilean data. To empirically test for the tax effect, an average tax rate was to be used in this study based on the income tax figure as a percentage of pretax income (Booth et al., 2001). However, the two data sources consulted, namely the *Economática* database and the Chilean *Bolsa*, revealed many discrepancies that could not be resolved. In particular, the sign of the tax figure would be positive in one database while reported as negative in the other. In other cases both sources will report the same sign but different amounts. Neither a consistent pattern could be discerned regarding the way that figure was reported, nor a third source could be found to resolve the inconsistencies. Thus, the decision was made to exclude this variable

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<sup>46</sup> The foreign ownership proxy was also measured as a continuous variable. Similar results to the ones reported in later sections are obtained.

from the analysis because of the possible confounding and ambiguous results that its inclusion might entail<sup>47</sup>.

### *Risk*

The business risk of the firm usually reflects the probability that the firm will go into bankruptcy, with an inverse relationship between the level of business risk of the firm and its leverage (Bradley, Jarrell and Kim, 1984). Proxies that are usually used to reflect the firm's business risk include: the standard deviation of the percentage change in operating income (Titman and Wessels, 1988); standard deviation of the first difference in sales over 5 years, scaled by the average value of the firm's total assets over the same period (Wiwattanakantang, 1999); variability of the return on assets over available time period (Crutchley and Hansen, 1989; Booth et al., 2001); size (Kim and Sorensen, 1986); and industry (Kim and Sorensen, 1986). The risk proxy used in this study is the standard deviation of the return on assets over a 3-year period, where the return on assets is calculated as operating profit divided by total assets (Booth et al., 2001)<sup>48</sup>. A risk dummy (HIRISK) is also calculated and is set equal to one when the 3-year standard deviation of the return on assets exceeds the median value, zero otherwise.

### *Tangibility of assets*

The secured debt hypothesis developed by Scott (1977) argues that the issuance of secured debt can increase the value of the firm, even in the absence of corporate taxes, and concludes that the optimal strategy of the firm would be to include as much secured debt as possible in a firm's capital structure. Since the "secured" quality of debt arises in

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<sup>47</sup> Relying only on the figures reported by *Económica*, the average tax rate variable was insignificant and did not change the significance of the ownership variables.

<sup>48</sup> The 5-year standard deviation of the return on assets was also calculated. However, this variable suffered from many missing values reducing sample size considerably.

many instances from the characteristics of firm assets, it can be inferred that firms with more tangible assets will issue more debt. The tangibility of assets also allows for a higher collateral value and a higher debt capacity. Previous studies have utilized several measures of the tangibility of assets among which are: the ratio of inventory plus gross plant and equipment to total assets (Titman and Wessels, 1988), and the ratio of fixed to total assets (Rajan and Zingales, 1995; Short, Keasey and Duxbury, 2002). To measure the tangibility of assets, the ratio of fixed assets to total assets (FA/TA) is used.

### *Profitability*

Under the assumption of informational asymmetries and that managers act in the best interest of existing shareholders, the pecking order hypothesis (Myers, 1984; Myers and Majluf, 1984) implies that managers will prefer to raise capital, first from retained earnings, second from debt, and third from issuing new equity. Thus, one would expect more profitable firms to resort to less external financing, be it in the form of debt or equity. Studies have generally supported this implication (Jensen, Solberg and Zorn, 1992; Friend and Lang, 1988; Titman and Wessels, 1988; Wiwattanakantang, 1999; Booth et al., 2001). To measure a firm's profitability, the ratio of earnings before interest and taxes to total assets is utilized (Friend and Lang, 1988; Rajan and Zingales, 1995; Wiwattanakantang, 1999; Harvey, Lins and Roper, 2002).

### *Accessibility*

Firms with access to preferred sources of credit and world financial markets are more likely to utilize debt. To measure this variable, four proxies are used. The first one is a dummy variable (ADR) set equal to one if a firm has issued American Depository

Receipts (ADRs) or has listed on a foreign exchange, zero otherwise. Data on Chilean firms with ADRs was obtained from the *Bolsa de Comercio*'s website.

The other three variables to proxy for access to credit are dummies for group membership (GROUP1 and GROUP2), and for whether the group contains a bank (BANK). Data on group membership was hard to obtain from one formal source. Personal communication with data administrators in Chile indicated that there was no official source from which groups could be identified. Such information had more of an informal nature and the best source was newspapers rankings, namely *Estrategía* and *El Diario Financiero*. Given that a group definition can vary from a couple of companies up to an intricate web of ownership ties between several corporations, the decision was made to utilize two sources identifying the most currently prominent Chilean groups. The first group classification (GROUP1) was adopted from *El Diario* (January 24, 2001). The second one (GROUP2) was retrieved from *El Diario*'s special supplement: "*Resultados de Grupos, Primer Semestre 2002*". Both classifications are reported in Table 4 with the latter classification corresponding to those groups set out in bold. The selection of these two classifications, in particular, was chosen because the latter classification focused primarily on the largest and most important groups in Chile, while the former was slightly broader in scope to include groups that were smaller in size yet were large enough to fall under a typical group configuration. Presence of a bank within the group was identified by the author based on firm group membership information that was collected from the above and other informal sources.



### *Information asymmetries*

As a proxy for informational asymmetries, I use a variation on the liquidity of the firm's shares. The *Económica* database reports a measure reflecting the presence of the shares of a firm (PRESENCE): the percentage of days of the year the stock has been traded. A more traded stock is expected to be characterized by lower levels of information asymmetries. A potential problem is that this variable may incorporate, apart from information availability, the fact that a very closely held company may rarely trade not because of lack of information but because of unwillingness on the part of owners to trade. Furthermore, domestic liquidity of shares and volume traded has also been shown to increase following an ADR issue (Hargis, 1997). To eliminate possible confounding effects from the PRESENCE variable, a regression is estimated with PRESENCE as the dependent variable and ADR and the Herfindahl index<sup>49</sup> as the independent variables. The residual from this regression (INFORMATION) will hence incorporate the level of information asymmetries without the influence of ownership concentration or the effect of ADRs. Regression results are reported in Table B6 in Appendix B.

### *Alternative mechanisms to avoid dilution of ownership*

To measure the extent to which dual class shares are present, a dummy variable (DUAL) is used. This variable is set equal to one if the *Bolsa de Comercio* reports the presence of more than one class of shares. To measure the utilization of pyramiding structures, two variables that are described in detail in a prior section are used. The first one (INDIRECT) is a dummy variable set equal to one if family ownership is more of an

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<sup>49</sup> The Herfindahl index is used here as a proxy for ownership concentration. Despite its previously mentioned limitations within the Chilean context, alternative variables cannot serve the same purpose.

indirect nature. Another variable (Cash Flow Leverage) reflecting the utilization of pyramiding structures is the ratio of control rights to cash flow rights.

### *Size*

Larger firms tend to be more diversified than smaller firms and, thus, are less likely to go bankrupt. Their direct bankruptcy costs are also lower (Warner, 1977; Ang et al., 1982). This leads to a greater debt capacity and to more favorable terms in the debt market (Kim and Sorensen, 1986). Larger firms also tend to have lower levels of informational asymmetries. Whether that will have a positive or negative impact on leverage depends on whether one is referring to informational asymmetries between insiders and creditors or between insiders and other shareholders. In the case where the reference is made to the former, size as a proxy will be positively related to leverage. The opposite is expected when the reference is made to the latter type of asymmetries. Size may also reflect accessibility, since larger firms may have an advantage over smaller ones in obtaining credit<sup>50</sup>. To measure size, the natural logarithm of total assets is used (LnTA) (Berger, Ofek and Yermack, 1997; Claessens et al., 2002; Harvey, Lins and Roper, 2002).

### *Investment opportunity set*

To measure a firm's investment/growth opportunities, previous studies have used the ratio of capital expenditures to total assets (Titman and Wessels, 1988; Lins, 2003; Harvey, Lins and Roper, 2002), capital spending relative to sales in previous year (Claessens et al., 2002), the growth of total assets (Titman and Wessels, 1988), research and development over sales (Titman and Wessels, 1988), market-to-book ratio (Rajan

and Zingales, 1995; Booth et al., 2001), annual growth in sales over prior years (La Porta et al., 1999; Claessens et al., 2002), etc. This study uses the ratio of capital expenditures to total assets as its proxy for a firm's investment opportunity set. The free cash flow problem will be represented by an interaction variable for firms with low investment opportunities and high profitability (Lo Investment\* Hi Profit), where Lo Investment is a dummy set equal to one if the capital expenditures to assets ratio is below the median sample value, and Hi Profit is a dummy given the value of one when the return on assets (EBIT/TA) exceeds the sample median figure.

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<sup>50</sup> The inclusion of ADRs, GROUP and PRESENCE as proxies for accessibility controls the possibility that size may reflect that advantage. Thus, conclusions regarding size may better reflect bankruptcy costs and diversification related advantages.

## CHAPTER V

### RESULTS

#### *A. Descriptive statistics*

Tables 5 and 6 provide descriptive statistics for sample firms. The non-consolidated data sample (Table 5) is comprised of 102 firms. Panel A reports descriptive statistics for ownership variables. The presence or absence of a family/coalition control could be identified for 96 firms. Of these, 77 companies were controlled by a family (80 percent). For the family sub-sample, family control rights averaged around 60 percent and family members controlled around 32 percent of the board of directors positions. In 21 of the 77 family firms, the CEO position was held by a family member, while 34 firms (44 percent) resorted to indirect mechanisms of control through the utilization of pyramiding structures that resulted in an average cash flow rights leverage ratio of about 2. This implies that controlling families were typically able to double the control value of each cash flow right. Of the total sample, majority control is maintained in almost 70 percent of the cases<sup>51</sup>. Institutional ownership averages slightly less than 10 percent, with the *Deposito Central de Valores* holding ownership blocks exceeding five and 10 percent in 49 and 37 percent of the cases, respectively. Foreign ownership is present in 26 firms,

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<sup>51</sup> This compares to 16.67 percent of non-financial Thai firms in 1996 (Wiwattanakantang, 1999).

dual-class shares in six firms, and 13 firms have listings on foreign exchanges. Group membership accounts for 45 percent of sample firms using the broader definition of

**Table 5**  
**Descriptive Statistics**  
**(Non-Consolidated Data)**

Panels A and B provide summary statistics for the data employed in the analysis. The sample is comprised of 102 firms with data covering year-end 2001. Panel A covers ownership variables. Family firms (FAMILY) are firms where control by a family or coalition of individuals is maintained. Family control rights represent the sum of share ownership by the controlling family, shareholders owned by the controlling family, as well as shareholders who have agreements with that family. Board control (BOARD) is defined as the fraction of board seats held by the family/coalition divided by board size. CEO is a dummy that equals one if the CEO is a family member. INDIRECT is a dummy given the value of one when the chain of ownership is of an indirect nature. Cash flow leverage is calculated as control rights divided by cash flow rights. Major is a dummy which equals one if a majority control of the firm is maintained by one or several related shareholders. DCV is the percentage share of the holdings of the *Deposito Central de Valores* (DCV). DCV5 and DCV10 are two dummies equal to one if DCV holdings exceed five percent and 10 percent, respectively. Several dummies are used to reflect other aspects of ownership. FOREIGN takes the value of one if foreign ownership in a firm exceeds 10 percent. DUAL equals one if a firm has more than one class of shares listed on the Chilean *Bolsa*. ADR is set equal to one if a firm has issued American Depository Receipts or has listed on a foreign exchange. GROUP1 and GROUP2 are equal to one if a firm belongs to an economic group using the broad and narrow definitions of group membership, respectively. BANK is equal to one if a group has a bank as one of its members. Panel B covers other financial variables. Total debt /Total assets is the book value of debt divided by total assets. LT liabilities/Total assets is the book value of long-term liabilities divided by total assets. ST debt/Total debt is the book value of short-term debt divided by the book value of total debt. Ln (Total assets) is the natural log of total assets. EBIT/Total assets is the ratio of earnings before interest and taxes to total assets. Fixed assets/Total assets is the book value of fixed assets divided by total assets. Risk is the 3-year standard deviation of EBIT/Total assets. Capital expenditures /Total assets is capital expenditures divided by total assets. PRESENCE is the percentage of days of the year the stock has been traded.

<i>Panel A: Ownership Variables</i>					
Variable	Mean	S. D.	Minimum	Maximum	Obs.
FAMILY	77 firms				96
Family control rights	59.6%	23.04	17.38	100	75
BOARD	32.07%	18.47	0	80	75
CEO	21 firms				77
INDIRECT	34 firms				77
Cash flow leverage	2.1	2.9	1	22.47	71
MAJOR	69 firms				99
DCV	9.68%	11.83	0	60.43	102
DCV5	50 firms				102
DCV10	38 firms				102
FOREIGN	25 firms				102
DUAL	6 firms				102
ADR	13 firms				102
GROUP1	46 firms				102
GROUP2	26 firms				102
BANK	16 firms (35% of GROUP1; 61% of GROUP2)				102

<i>Panel B: Other Variables</i>					
Variable	Mean	S. D.	Minimum	Maximum	Obs.
Total debt/Total assets	16.66%	14.95	0	60.35	98
LT liabilities/Total Assets	13.04%	12.54	0	59.95	102
ST debt/total debt	59.28%	34.54	.7	100	93
Ln (Total assets)	11.39	1.61	4.13	14.85	102
EBIT/Total assets	3.48%	7.8	-41.94	22.83	102
Fixed assets/Total assets	30.21%	25.25	0	94.21	102
RISK	2.24	4.86	.026	46.13	99
Capital expenditures/total assets	3.48%	4.54	0	23.42	94
PRESENCE	31.96%	34.73	0	100	102

groups and for 25.5 percent using the classification encompassing only the largest groups<sup>52</sup>.

Panel B of Table 5 reports descriptive statistics for the other variables utilized in the analysis. On average, a firm has a 16.6 percent total debt to total assets ratio with almost 60 percent of that debt with short-term maturity. Firm size, measured as the natural log of total assets, has a mean 11.39 corresponding to a total assets figure of approximately \$236 million. Operating profitability averaged around 3.5 percent<sup>53</sup>. Fixed assets constituted around a third of total assets, and the three-year standard deviation of the ratio of EBIT to total assets was around 2.24. Capital expenditures averaged around 3.5 percent of total assets. Finally, sample firms traded an average of 32 percent of the trading days.

<sup>52</sup> Of the total number of listed firms excluding firms with majority state participation, group firms constitute 39.75 percent using the GROUP1 classification. This is consistent with other findings in the literature concerning group affiliation in Chile; Claessens, Djankov and Klapper's (2000) report 40 percent group membership for a sample of 55 publicly traded companies for the period 1991-96, while Khanna and Rivkin (2000) find that group members comprise 44 percent (203 firms) of the universe of publicly-traded firms (457 firms) in 1997. However, Lefort and Walker (2000) report higher percentages of group memberships (65.4, 68.2, and 73.3 percent for 1990, 1994, and 1998, respectively). This discrepancy can be attributed to the more encompassing group definition adopted by Lefort and Walker (2000); while Khanna and Rivkin (2000) report the presence of 33 groups in Chile in 1997, Lefort and Walker's number stands at 47 non-financial groups in 1998.

<sup>53</sup> An initial examination of the skewness and kurtosis measures along with a visual examination of the normal probability plots does not detect any normality violations except for the profitability measure (EBIT/TA). An outlier value for *Comercial e Industrial Viña S.A. (Comviña)* is detected and deleted. This considerably improves the skewness and kurtosis measures for the above variable and corrects the non-normality issue.

Table 6 reports descriptive statistics using consolidated data. There are 88 firms in the consolidated data sample, 79 percent of which are controlled by families. More or less the consolidated sample statistics are similar to those of the non-consolidated sample.

**Table 6**  
**Descriptive Statistics**  
**(Consolidated Data)**

Panels A and B provide summary statistics for the data employed in the analysis. The sample is comprised of 102 firms with data covering year-end 2001. Panel A covers ownership variables. Family firms (FAMILY) are firms where control by a family or coalition of individuals is maintained. Family control rights represent the sum of share ownership by the controlling family, shareholders owned by the controlling family, as well as shareholders who have agreements with that family. Board control (BOARD) is defined as the fraction of board seats held by the family/coalition divided by board size. CEO is a dummy that equals one if the CEO is a family member. INDIRECT is a dummy given the value of one when the chain of ownership is of an indirect nature. Cash flow leverage is calculated as control rights divided by cash flow rights. Major is a dummy which equals one if a majority control of the firm is maintained by one or several related shareholders. DCV is the percentage share of the holdings of the *Deposito Central de Valores* (DCV). DCV5 and DCV10 are two dummies equal to one if DCV holdings exceed five percent and 10 percent, respectively. Several dummies are used to reflect other aspects of ownership. FOREIGN takes the value of one if foreign ownership in a firm exceeds 10 percent. DUAL equals one if a firm has more than one class of shares listed on the Chilean *Bolsa*. ADR is set equal to one if a firm has issued American Depository Receipts or has listed on a foreign exchange. GROUP1 and GROUP2 are equal to one if a firm belongs to an economic group using the broad and narrow definitions of group membership, respectively. BANK is equal to one if a group has a bank as one of its members. Panel B covers other financial variables. Total debt/Total assets is the book value of debt divided by total assets. LT liabilities/Total assets is the book value of long-term liabilities divided by total assets. ST debt/Total debt is the book value of short-term debt divided by the book value of total debt. Ln (Total assets) is the natural log of total assets. EBIT/Total assets is the ratio of earnings before interest and taxes to total assets. Fixed assets/Total assets is the book value of fixed assets divided by total assets. Risk is the 3-year standard deviation of EBIT/Total assets. Capital expenditures/Total assets is capital expenditures divided by total assets. PRESENCE is the percentage of days of the year the stock has been traded.

<i>Panel A: Ownership Variables</i>					
Variable	Mean	S. D.	Minimum	Maximum	Obs.
FAMILY	65 firms				82
Family control rights	57.79%	23.88	17.38	100	63
BOARD	34.57%	17.58	0	80	64
CEO	21 firms				65
INDIRECT	22 firms				65
Cash flow leverage	1.54	1.08	1	5.16	59
MAJOR	55 firms				85
DCV	9.47%	11.73	0	60.43	88
DCV5	43 firms				88
DCV10	32 firms				88
FOREIGN	21 firms				88
DUAL	6 firms				88
ADR	12 firms				88
GROUP1	35 firms				88
GROUP2	18 firms				88
BANK	12 firms (34% of GROUP1; 67% of GROUP2)				88

*Panel B: Other Variables*

<b>Variable</b>	<b>Mean</b>	<b>S. D.</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Obs.</b>
Total debt/Total assets	22.98%	15	0	60.5	85
LT liabilities/Total Assets	14.8%	12.18	0	50.33	88
ST debt/total debt	56.78%	31.83	.7	100	81
Ln (Total assets)	11.47	1.77	4.13	15.15	88
EBIT/Total assets	4.82%	8.226	-41.94	23.02	88
Fixed assets/Total assets	48.56	21.45	0	94.94	88
RISK	2.75	5.15	.16	46.13	86
Capital expenditures/total assets	5.06%	5.37	.017	23.78	85
PRESENCE	31.8%	34.72	0	100	88

The main differences pertain to a higher level of leverage for the consolidated sample (23 versus 16.6 percent) and a higher ratio of fixed to total assets (48.56 versus 30.21 percent).

Panel A of Table 7 provides a univariate analysis between family and non-family controlled firms. Consolidated (non-consolidated) data is reported in bold (regular) font. Family firms seem to be slightly larger in size, have higher leverage ratios, higher utilization of long-term debt and invest more. Organization wise, family firms organize more within the group structure and have less foreign participation than non-family firms. They also are the only ones who issue dual-class shares among sample firms. No significant differences are detected between the two types of ownership regarding operating profitability, operating risk, and fixed asset utilization. Furthermore, family firms do not seem to trade more frequently on the local stock exchange and institutional shareholders do not favor one type of ownership over the other. Panel B of the same table considers the family sub-sample and divides it along the direct/indirect ownership dimension. Though no significant differences can be detected regarding the amount of total debt utilized between the two groups, firms with more indirect ownership chains seem to be employing slightly higher amounts of long-term liabilities relative to firms



with more direct ownership chains. A possible explanation for this finding is that indirect ownership implies a larger number of related companies whether as subsidiaries or parents. Since one component of long-term liabilities is the payables due to related companies, one would expect that firms with indirect ownership structures would have a larger number of related companies to deal with and consequently a larger amount of these payables. The main difference between the two subgroups, however, seems to relate to the managerial involvement of the controlling family/coalition. Owners with direct ownership stakes seem to be more likely to get involved in the company's operations whether through having a family member hold the CEO position or through having a higher representation on the Board of Directors.

**Table 7**  
**Univariate Analysis**

Panels A and B report univariate test results for the total sample and family sub sample, respectively. Consolidated data results are reported in bold. Panel A provides difference of means tests between family and non-family firms. Family firms are firms where control by a family is maintained. Non-family firms are firms where no such control could be identified. Panel B provides difference of means tests between family firms where the chain of ownership is direct and those where the chain of ownership is indirect. Ln (Total assets) is the natural log of total assets. EBIT/Total assets is the ratio of earnings before interest and taxes to total assets. Risk is the 3-year standard deviation of EBIT/Total assets. Fixed assets/Total assets is the book value of fixed assets divided by total assets. Total debt/Total assets is the book value of debt divided by total assets. LT liabilities/Total assets is the book value of long-term liabilities divided by total assets. ST debt/Total debt is the book value of short-term debt divided by the book value of total debt. Capital expenditures/Total assets is capital expenditures divided by total assets. PRESENCE is the percentage of days of the year the stock has been traded. GROUP1 and GROUP2 are dummies equal to one if a firm belongs to an economic group using the broad and narrow definitions of group membership, respectively. BANK is a dummy equal to one if a group has a bank as one of its members. Institution is the percentage share of the holdings of the Deposito Central de Valores (DCV). Foreign is the percentage holdings of a foreign owner. DUAL is a dummy that equals one if a firm has more than one class of shares listed on the Chilean Bolsa. Board control (BOARD) is defined as the fraction of board seats held by the family/coalition divided by board size. CEO is a dummy that equals one if the CEO is a family member.

<i>Panel A: Total sample</i>			
Variable	Family Firms (n = 64) (n = 76)	Non-Family Firms (n = 17) (n = 19)	t-Test Probability
Ln (Total assets)	<b>11.74</b>	<b>11.27</b>	<b>.15</b>
	11.62	11.2	.14
EBIT/Total assets	<b>5.35</b>	<b>4.74</b>	<b>.37</b>
	3.84	3.82	.5
Risk	<b>2.05</b>	<b>2.58</b>	<b>.19</b>
	1.73	2.02	.19
Fixed assets/Total assets	<b>48.61</b>	<b>48.12</b>	<b>.47</b>
	29.13	34.58	.19
Total debt/Total assets	<b>24.78</b>	<b>16.63</b>	<b>.02</b>
	18.2	9.53	.00
LT liabilities/Total assets	<b>15.93</b>	<b>10.22</b>	<b>.01</b>
	14.19	8.84	.02
ST debt/Total debt	<b>51.65</b>	<b>78.54</b>	<b>.00</b>
	54.68	79.94	.00
Presence	<b>33.6</b>	<b>33.06</b>	<b>.48</b>
	33.99	31.07	.37
Capital expenditures/ Total assets	<b>5.21</b>	<b>3.43</b>	<b>.02</b>
	3.56	2.57	.08
GROUP1	<b>34 firms</b>	<b>1 firm</b>	<b>.00</b>
	44 firms	2 firms	.00
GROUP2	<b>17 firms</b>	<b>1 firm</b>	<b>.01</b>
	24 firms	2 firms	.01
Institution	<b>9.45</b>	<b>11.18</b>	<b>.3</b>
	9.88	10.4	.43
Foreign	<b>5.09</b>	<b>53.04</b>	<b>.00</b>
	5.12	50.82	.00
Dual	<b>5 firms</b>	<b>0 firms</b>	<b>.01</b>
	5 firms	0 firms	.01

<i>Panel B: Family sub-sample</i>			
Variable	Direct Ownership	Indirect Ownership	t-Test Probability
	(n = 42)	(n = 22) (n = 34)	
Total debt/Total assets	<b>25.53</b> 19.05	<b>23.4</b> 17.23	<b>.3</b> .3
Long-term liabilities/Total assets	<b>14.58</b> 12.28	<b>18.53</b> 16.56	<b>.12</b> .08
Short-term debt/Total debt	<b>51.4</b> 56.2	<b>43.38</b> 52.81	<b>.17</b> .34
GROUP1	<b>21 firms</b> 21 firms	<b>13 firms</b> 23 firms	<b>.25</b> .06
GROUP2	<b>5 firms</b> 5 firms	<b>12 firms</b> 19 firms	<b>.00</b> .00
Board	<b>36.42%</b> 36.42	<b>29.97%</b> 25.83	<b>.1</b> .01
CEO	<b>18 firms</b> 18 firms	<b>3 firms</b> 3 firms	<b>.00</b> .00

### *B. Regression results*

Three regression models are utilized to test the hypothesized relationships. The first model targets the cross-sectional relationship between leverage and family ownership (H1a, H2a, H2b, H3 and H5). The second model relates leverage to the characterizing features of family-controlled firms (H4, H6a and H6b), while the last model aims at investigating the relationship between the maturity structure of debt and family ownership (H1b).

#### Model 1: Leverage and family ownership (Tables 8 and 9; B7-12 in Appendix B)

The first model relates the leverage decision to family ownership while controlling for several determinants of capital structure, namely size (natural log of total assets), profitability (ratio of earnings before interest and taxes to total assets), risk (a dummy variable assigned a value of one if the three-year standard deviation of EBIT/TA exceeds the median value, zero otherwise), and the tangibility of assets (ratio of fixed assets to total assets).

Tables 8, 9 report 2001 non-consolidated and consolidated data, respectively, using total debt to total assets ratio as the leverage proxy, while Tables B7-B12 in the appendix report the results for 2001 and 2000 non-consolidated and consolidated data for both measures of leverage: the ratio of total debt to total assets and the ratio of long-term liabilities to total assets. The various specifications reported in these tables add different variables and dimensions of ownership, with the first specification including capital structure determinants along with the FAMILY variable (a dummy given the value of one when a controlling family is identified, zero otherwise). The second specification incorporates group membership (GROUP2) and the presence of a bank within the group (BANK). The third specification includes a proxy for information asymmetries (the residual of regressing presence on the Herfindahl index and ADR). The fourth specification includes another two types of ownership: institutional holdings (the percentage of shares held by the DCV) and foreign holdings (a dummy given a value of one if a foreign blockholder with a 10 percent ownership or more is identified, zero otherwise). The last specification includes an interaction variable (FAMILY\*Hi Risk) to account for family firms with higher levels of business risk.

The fit of all specifications reveals high significance. The adjusted R-squared ranges from five to 44 percent depending on the dependent variable used. Generally, models utilizing the long-term liabilities to total assets measure of leverage have higher explanatory power than those using the total debt to total assets ratio. These figures are in line with the explanatory power of other capital structure empirical models<sup>54</sup>.

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<sup>54</sup> Rajan and Zingales (1995) report explanatory powers that range from five to 30 percent. Friend and Hasbrouck's (1988) regression models have adjusted R-squared ranging from nine to 25 percent. Booth et al. (2001) report adjusted R-squared ranging from seven to 88 percent depending on the country being analyzed.

A synthesis of the results reported in the above tables leads to the following conclusions. First, regarding classical capital structure determinants, financing policies of Chilean firms seem to be generally influenced by more or less the same factors that have been proven to affect capital structure decisions in the U.S. Size is generally positively related to leverage with larger firms employing more debt and having longer-term liabilities. This is in line with the premise that larger firms are more diversified, have more access to credit markets, and suffer from lower informational asymmetries, all of which will result in higher levels of leverage. The pecking order hypothesis is also supported in the Chilean context. More profitable firms rely on less debt since higher earnings reduce the need to tap external sources of funds. Regarding the effect of asset tangibility, a higher level of fixed assets is found to be associated with higher levels of leverage.

As far as the role that ownership variables play in affecting the financing policies of the firm, the findings of this study suggest that firms that are controlled by their owners, whether families or coalitions of individuals, utilize higher levels of leverage than non-family/coalition controlled firms (Hypothesis 1a). The family ownership variable is positive and significant across most of the specifications<sup>55</sup>. Two perspectives, the control perspective and the agency perspective, can help explain the higher reliance of family-controlled firms on debt relative to non-family controlled firms. The control viewpoint is based on the premise that debt can serve an important control function, allowing family firms to finance expansion with the ownership dilution effects of equity

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<sup>55</sup> The inclusion of other types of blockholders, namely foreign and institutional holdings, seems to affect the significance of the family variable in some specifications, even when the former variables are insignificant. The high correlation between family and foreign ownership (-.6 in 2001 and -.58 in 2000) and the resulting multicollinearity issue may be a factor behind such results.

financing (Stulz, 1988). The agency perspective, on the other hand, posits that the active role that families play in the management of their firms reduces the incentive-related agency costs of debt (Kim and Sorenson, 1986; Anderson, Mansi and Reeb, 2002). Given this role, family firms will have higher debt ratios than their non-family counterparts. At this point in the analysis, it is not clear yet whether control is the motivation for higher debt ratios or whether the reduction in the agency costs of debt is the driving force behind this result. Further analysis in the next section will shed more light on this issue.

The second hypothesis of this study focuses on the industrial group organizational structure and how it may affect the use of leverage by Chilean firms. The two dimensions of this hypothesis are tested by including a dummy for large-group membership (GROUP2) and another one for the presence of a bank within a group (BANK) (specification 2). Contrary to the expectation that a group may act as a capital facilitator for its members, groups do not increase the debt capacity of their affiliates. Quite the opposite, group-affiliated firms have lower levels of leverage, a result that is significant both statistically and economically<sup>56 57</sup>. There are two possible rationales for this finding. The first one is that this finding may reflect the changing role of groups over time as the institutional context within which groups operate evolves. While earlier studies have focused on capital market imperfections as a key trigger of group formation (Leff, 1976, 1978), such research may be somewhat outdated in today's emerging markets' environments. Khanna and Palepu (2000a) provide evidence on slowly declining benefits of group affiliation in Chile over the 1988-96 period. They attribute such decrease to the evolution of the institutional context within the country, in particular capital market and

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<sup>56</sup> This result is more pronounced when using consolidated data.

<sup>57</sup> The broader definition of group membership (GROUP1) yielded insignificant results (not reported).

labor market developments. The second rationale for lower leverage levels among group members is that group membership and structure may be representative of other variables influencing leverage. On the one hand, the GROUP2 variable encompasses membership in the largest business groups in Chile. Being a member of such conglomerates may imply more press coverage, larger size and less informational asymmetries leading to lower agency costs of equity and thus a lesser need to resort to debt financing. On the other hand, large-group membership may also indicate more intricate pyramiding structures that uncouple cash flow rights from control rights, and, consequently, an alternative mechanism to debt for maintaining control. Calculating the cash flow leverage ratio for both group and non-group members reveals that large-group membership is associated with higher levels of cash flow and control rights separation. For sample firms, group members report an average cash flow leverage ratio of 2.67, while non-group members have a ratio of 1.31. The difference in means is significant at the one percent level. This aspect may be behind the lower reliance on debt by group members.

The other dimension of group membership with possible implications regarding the financing policies of firms is the presence of a bank within a group. Hypothesis 2b posits that such a bank may imply preferential access to credit by group firms. The results provide moderate support to this premise. The sign of the BANK coefficient is positive throughout. However, statistical significance is not found across all specifications. Given that interlocking directorates characterize the financial and non-financial firms of a

group, it comes as no surprise that “related lending” takes place within the Chilean corporate environment<sup>58</sup>.

Hypothesis 3, positing that firms with high levels of informational asymmetries will exhibit higher levels of leverage, is robustly supported across specifications. The informational asymmetries proxy (the residual of the regression of PRESENCE on the Herfindahl index and ADR, Table B6) is negative and significant across specifications. Higher values for this proxy (lower levels of informational asymmetries) lead to lower use of debt. This is consistent with the postulations of the third hypothesis. The effect of the institutional and legal context of poor shareholder protection and futile control contests seems to be particularly pronounced for firms with high levels of information asymmetries. This is indicated by the higher reliance of such firms on debt in an environment conducive to equity under valuations.

The fifth hypothesis posits that family firms with higher levels of business risk will be more reluctant to employ debt because of a family’s less-than optimal diversification compared to atomistic shareholders. An interaction variable (FAMILY\*HIRISK) is used in specification 5 to test this hypothesis. Support for this premise is weak. Though family firms with higher levels of business risk use less leverage, as evidenced by the negative coefficient on the interaction variable, this finding is significant at the 10 percent level only for 2001 consolidated data when using the total debt to total assets ratio as the leverage measure. This weak support may be due to the fact that a deeper analysis of this issue is required to be able to unveil the risk aversiveness of family owners. In particular, the proportion that a family has invested in the firm relative to its

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<sup>58</sup> Within the Mexican context, where banks are also controlled by stockholders who have ownership stakes in non-financial firms, La Porta, López-de-Silanes and Zamarripa report that 20 percent of banks’ loans



total wealth portfolio is a major determinant of the attitudes of families towards risk. A family with a well-diversified portfolio of assets in firms in different lines of businesses is bound to be less risk-averse than a family whose whole wealth is invested in one firm. To this end, Holmén, Knopf and Peterson (2002) report that, for a sample of Swedish firms, managers with poor portfolio diversification use less debt. The authors measure managerial diversification by the market value of an individual's equity investment in the firm as a percentage of the net wealth of that individual. Unfortunately, information that helps in measuring the diversification of families, namely the family's net wealth, was not available for Chilean firms within the sources I have consulted.

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**outstanding were extended to related parties.**

**Table 8**  
**Regression Results**  
**Full Sample**  
**(2001 Non-Consolidated Data)**  
*y = total debt to total assets ratio*

This table reports results of regressing leverage on family ownership. Leverage is measured as the book value of debt divided by total assets. Family firms (FAMILY) are firms where control by a family or coalition of individuals is maintained. Ln (Total assets) is the natural log of total assets. EBIT/Total assets is the ratio of earnings before interest and taxes to total assets. Hi Risk is a dummy that equals one when the 3-year standard deviation of EBIT/Total assets exceeds the median value. Fixed assets/Total assets is the book value of fixed assets divided by total assets. GROUP2 is equal to one if a firm belongs to an economic group using the narrow definition of group membership. BANK is equal to one if a group has a bank as one of its members. Information Asymmetry is the residual of the regression of PRESENCE on the Herfindahl index and ADR. Institution is the percentage share of the holdings of the *Deposito Central de Valores* (DCV). FOREIGN takes the value of one if foreign ownership in a firm exceeds 10 percent. FAMILY\*Hi Risk is an interaction variable. *p*-values are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)
Constant	5.736 (.69)	2.356 (.873)	-8.383 (.605)	11.059 (.457)	-9.847 (.559)
Ln (Total Assets)	.414 (.716)	.737 (.531)	1.674 (.207)	-.18 (.888)	1.698 (.203)
EBIT/Total assets	-.646 (.01)	-.647 (.01)	-.686 (.006)	-.639 (.013)	-.686 (.006)
Hi Risk	-6.601 (.049)	-5.691 (.098)	-6.383 (.054)	-5.478 (.112)	-4.321 (.528)
Fixed Assets/Total Assets	.137 (.066)	.13 (.085)	.151 (.043)	.122 (.106)	.151 (.043)
FAMILY	9.552 (.01)	10.28 (.007)	8.802 (.0172)	9.187 (.066)	10.185 (.064)
GROUP2		-4.36 (.425)			
BANK		.061 (.992)			
Information Asymmetry			-.103 (.072)		-.1 (.085)
Institution				.194 (.154)	
Foreign				-1.063 (.813)	
FAMILY*Hi Risk					-2.54 (.731)
Observations	90	90	90	90	90
R-squared	.162	.177	.194	.184	.195
Adjusted R-squared	.112	.107	.135	.115	.127
F-statistic	3.25 (.01)	2.52 (.021)	3.33 (.005)	2.65 (.016)	2.84 (.011)

**Table 9**  
**Regression Results**  
**Full Sample**  
**(2001 Consolidated Data)**

$y = \text{total debt to total assets ratio}$

This table reports results of regressing leverage on family ownership. Leverage is measured as the book value of debt divided by total assets. Family firms (FAMILY) are firms where control by a family or coalition of individuals is maintained. Ln (Total assets) is the natural log of total assets. EBIT/Total assets is the ratio of earnings before interest and taxes to total assets. Hi Risk is a dummy that equals one when the 3-year standard deviation of EBIT/Total assets exceeds the median value. Fixed assets/Total assets is the book value of fixed assets divided by total assets. GROUP2 is equal to one if a firm belongs to an economic group using the narrow definition of group membership. BANK is equal to one if a group has a bank as one of its members. Information Asymmetry is the residual of the regression of PRESENCE on the Herfindahl index and ADR. Institution is the percentage share of the holdings of the *Deposito Central de Valores* (DCV). FOREIGN takes the value of one if foreign ownership in a firm exceeds 10 percent. FAMILY\*Hi Risk is an interaction variable. *p*-values are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)
Constant	-21.737 (.118)	-20.646 (.07)	-23.8 (.078)	-10.093 (.397)	-35.715 (.011)
Ln (Total Assets)	3.532 (.002)	3.579 (.000)	3.843 (.002)	2.791 (.015)	4.265 (.000)
EBIT/Total assets	-.496 (.042)	-.578 (.015)	-.541 (.026)	-.458 (.053)	-.563 (.018)
Hi Risk	3.382 (.316)				14.06 (.043)
Fixed assets/Total assets	-.196 (.8)				
FAMILY	7.01 (.071)	8.621 (.022)	6.294 (.096)	3.567 (.453)	14.977 (.005)
GROUP2		-12.75 (.031)			-13.056 (.026)
BANK		7.352 (.266)			7.954 (.228)
Information Asymmetry			-.069 (.267)		
Institution				.178 (.207)	
Foreign				-5.947 (.178)	
FAMILY*Hi Risk					-12.956 (.083)
Observations	78	79	79	79	78
R-squared	.197	.247	.202	.229	.288
Adjusted R-squared	.141	.196	.159	.177	.217
F-statistic	3.54 (.006)	4.8 (.001)	4.68 (.002)	4.35 (.002)	4.05 (.000)

**Model 2: Leverage within family firms (Tables 10 and 11; B13-B18 in Appendix B)**

Tables 10, 11 (2001 consolidated and non-consolidated data using total debt to total assets ratio as the leverage proxy) and B13-B18 (2000 and 2001 consolidated and non-consolidated data for both measures of leverage) report the results of regressions relating leverage to some characterizing features of family ownership. Considering only the sub-sample of family-controlled firms, the regressions consider the relationship between both measures of leverage and the following: capital structure determinants, a free cash flow variable, the type of ownership chain utilized by the family (direct versus indirect), the degree of separation between the cash flow rights and control rights of the controlling family (cash flow leverage), the level of family representation on the board of directors (the ratio of family-related members as a percentage of total members), and whether a family member occupies the CEO position or not (CEO dummy).

Family sub-sample results for capital structure determinants are consistent with the results for the total sample. Larger firms, in general, utilize more leverage. Higher profitability leads to lower use of debt. Business risk is not a significant determinant of leverage. Asset tangibility, though positively related to the debt ratio, is not significant across all specifications. The fit of all specifications using consolidated data reveals high significance. The adjusted R-squared for these specifications ranges from nine to 40 percent depending on the dependent variable used. However, the model's fit and explanatory power are weak for the 2001 non-consolidated data especially when using the total debt to total assets ratio as the dependent variable; adjusted R-squared hovers below five percent and the model's F-statistic fails to achieve statistical significance.

To test the fourth hypothesis that suggests that firms with free cash flow will avoid the governance role of debt, an interaction variable for highly profitable firms with low investment opportunities is added to the regression. It is expected that family firms who have free cash flow will utilize less debt because of the implications that debt's governance function may have on their control of the firm. Contrary to expectations, the coefficient on the interaction variable is positive, though not significant. This finding may not be surprising if we consider that debt's governance function has been derived in an environment characterized by atomistic shareholders. The underlying premise of the governance hypothesis is that a high level of separation exists between management and ownership of the firm along with dispersed ownership that accentuates the free-rider problems (Jensen, 1986). The fact that the Chilean context does not meet the above assumptions will, thus, undermine the governance role assigned to debt in U.S.-based literature. The high levels of ownership concentration as well as the active involvement of families in the management of their firms brings together the interests of managers and shareholders as well as those of managers/shareholders and creditors. Industry effects are another factor that may contribute to the insignificance of the free cash flow proxy.

To test for the effect of the availability of alternative control mechanisms on the use of debt (Hypothesis 6), three variables are utilized. The first variable (DUAL) indicating the existence of dual-class shares, reveals no significance across all specifications (results not reported). This comes as no surprise given that dual-class firms in Chile do not necessarily reflect a deviation from the one-share, one-vote principle, and thus provides strong support for H6a.

To examine the role that other control mechanisms, namely pyramiding, can have on the use of leverage, two variables are incorporated in the analysis. The first one, **INDIRECT**, implies the utilization of multiple ownership chains (specification 1). The second, the cash flow leverage ratio, attempts to measure the multiple control rights generated by one cash flow right as a result of employing pyramiding structures (specification 2). Both variables offer different means of testing H6b, whereby both are expected to reflect that pyramiding acts as a substitute control mechanism to debt.

Using non-consolidated data, the coefficients on the above two pyramiding variables are generally insignificant. One possible reason that the **INDIRECT** and cash flow leverage measures are insignificant is that non-consolidated data may be of inferior quality in terms of having the power to capture pyramiding effects. Another reason is the possibility that the two variables of interest, **INDIRECT** and Cash Flow Leverage, may proxy for two factors with opposing effects on the level of financial leverage in the firm. As an alternative control mechanism, these variables will act as a substitute for debt and thus will be negatively associated with it. However, these variables may play a significant role in reducing the value of the firm (Claessens et al., 1999; Lins, 2003) resulting in higher agency costs of equity and a higher reliance on debt as a source of financing once profitability is controlled for. The net effect of these two opposing forces may be the reason behind the variables' insignificance. The negative sign on the coefficients of these variables may be interpreted as tilting the results more in favor of ownership characteristics having more of a control function.

The consolidated data results (Table 11) are more in line with the expectations conjectured in H6b. The coefficients for both variables, **INDIRECT** and Cash Flow

Leverage, are significant for 2000 and 2001 when using the total debt to assets ratio. Firms with indirect ownership chains and with high levels of cash flow leverage maintain lower debt levels than firms with more direct ownership and low levels of separation between cash flow and control rights. The use of long-term liabilities to total assets ratio produces some mixed results. Only Cash Flow Leverage is significant for these specifications. However, this finding is not very surprising given the composition of the two financial leverage ratios used. The total debt to total assets ratio includes only the debt portion, short and long-term, that is supplied by banks and financial institutions. In that sense it is more of a pure measure of debt's control role. The long-term liabilities to total assets ratio, on the other hand, includes notes payables, deferred taxes and other long-term provisions that arise from a firm's operations rather than a conscious financing policy decision.

The evidence so far, thus, implies that debt and pyramiding serve as substitute control mechanisms. This finding further sheds light on the reasoning behind higher levels of leverage among family-controlled firms. While two rationales were suggested in the development section of the first hypothesis (the control function and the reduction in debt's agency costs), the results suggest that higher levels of leverage are utilized more because of their control function rather than because of higher debt capacity owing to the reduction in the agency costs of debt. To further explore this issue, two proxies for family involvement in the management of the firm are added to the regression. The first one relates to family representation on the board of directors (specifications 3 and 5) while the second corresponds to whether the CEO is a family member or not (specifications 4 and 6). It is assumed that this higher level of involvement by the owners in the

management of the firm is the route through which the agency costs of debt are reduced. The inclusion of these variables, however, bears no significance to the level of debt implying that the higher levels of debt by family firms are more control-driven rather than agency-related<sup>59</sup>.

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<sup>59</sup> An exception to this finding is in Table A11, where the coefficient on the CEO variable is positive and significant at the five and 10 percent levels in specifications 4 and 6, respectively.



**Table 10**  
**Regression Results**  
**Family Sub-Sample**  
**(2001 Non-Consolidated Data)**  
*y = total debt to total assets ratio*

This table reports results of regressing leverage on characterizing features of family-controlled firms. Leverage is measured as the book value of debt divided by total assets. Ln (Total assets) is the natural log of total assets. EBIT/Total assets is the ratio of earnings before interest and taxes to total assets. Hi Risk is a dummy that equals one when the 3-year standard deviation of EBIT/Total assets exceeds the median value. Fixed assets/Total assets is the book value of fixed assets divided by total assets. To proxy for free cash flow, an interaction variable, LoInvestment\*HiProfit, is used. LoInvestment is a dummy given the value of one when the capital expenditures to total assets ratio is less than the median value. HiProfit is a dummy set equal to one when the EBIT to total assets ratio is greater than the median value. INDIRECT is a dummy given the value of one when the chain of ownership is of an indirect nature. Cash flow leverage is calculated as control rights divided by cash flow rights. Board control (BOARD) is defined as the fraction of board seats held by the family/coalition divided by board size. CEO is a dummy that equals one if the CEO is a family member. *p*-values are reported in parentheses.

	(1)	(2)
Constant	1.06 (.948)	14.61 (.362)
Ln (Total Assets)	1.603 (.231)	.376 (.771)
EBIT/Total assets	-.627 (.033)	-.833 (.01)
Hi Risk	-6.741 (.089)	-6.919 (.081)
Fixed Assets/Total Assets	.152 (.087)	.203 (.031)
LoInvestment*HiProfit	6.551 (.168)	6.655 (.162)
INDIRECT	-3.584 (.327)	
Cash flow leverage		-.63 (.281)
BOARD		
CEO		
Observations	67	61
R-squared	.141	.197
Adjusted R-squared	.055	.108
F-statistic	1.63 (.153)	2.21 (.056)

**Table 11**  
**Regression Results**  
**Family Sub-Sample**  
**(2001 Consolidated Data)**

$$y = \text{total debt to total assets ratio}$$

This table reports results of regressing leverage on characterizing features of family-controlled firms. Leverage is measured as the book value of debt divided by total assets. Ln (Total assets) is the natural log of total assets. EBIT/Total assets is the ratio of earnings before interest and taxes to total assets. Hi Risk is a dummy that equals one when the 3-year standard deviation of EBIT/Total assets exceeds the median value. Fixed assets/Total assets is the book value of fixed assets divided by total assets. To proxy for free cash flow, an interaction variable, LoInvestment\*HiProfit, is used. LoInvestment is a dummy given the value of one when the capital expenditures to total assets ratio is less than the median value. HiProfit is a dummy set equal to one when the EBIT to total assets ratio is greater than the median value. INDIRECT is a dummy given the value of one when the chain of ownership is of an indirect nature. Cash flow leverage is calculated as control rights divided by cash flow rights. Board control (BOARD) is defined as the fraction of board seats held by the family/coalition divided by board size. CEO is a dummy that equals one if the CEO is a family member. *p*-values are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-22.861 (.148)	-8.651 (.535)	-18.874 (.158)	-18.383 (.174)	-7.422 (.597)	-7.227 (.621)
Ln (Total Assets)	4.331 (.001)	3.581 (.005)	3.873 (.002)	4.074 (.001)	3.036 (.022)	3.52 (.007)
EBIT/Total assets	-.714 (.016)	-.856 (.004)	-.626 (.024)	-.595 (.032)	-.776 (.008)	-.744 (.013)
Hi Risk	.732 (.842)					
Fixed Assets/Total Assets	.028 (.758)					
LoInvestment*HiProfit	6.728 (.14)	7.66 (.097)				
INDIRECT	-7.132 (.079)		-6.12 (.114)	-6.321 (.112)		
Cash flow leverage		-3.135 (.07)			-2.44 (.19)	-3.188 (.087)
BOARD			.106 (.296)		.15 (.196)	
CEO				2.067 (.589)		.958 (.813)
Observations	62	56	62	62	56	56
R-squared	.24	.254	.222	.211	.238	.213
Adjusted R-squared	.157	.195	.168	.156	.178	.151
F-statistic	2.9 (.016)	4.34 (.004)	4.07 (.006)	3.81 (.008)	3.98 (.007)	3.45 (.014)

### **Model 3: Determinants of debt maturity structure (Tables 12 and 13)**

Tables 12 and 13 analyze whether family firms have a preference regarding the maturity structure of their debt. The regression relates the ratio of short-term-to-total-debt to determinants of debt maturity and family ownership.

There are several factors that play a role in determining the mix of short-term and long-term debt. Size is expected to be positively associated with the maturity of debt due to the better access that larger firms have to capital markets as well as the economies of scale that larger firms enjoy when it comes to the flotation costs of issuing long-term debt. In line with empirical findings in the literature (Titman and Wessels, 1988; Barclay and Smith, 1995; Stohs and Mauer, 1996; Demirgüç-Kunt and Maksimovic, 1999; Ozkan, 2000), larger firms in Chile employ lower levels of short-term debt than smaller firms. The coefficient on the size variable is negative and highly significant.

Credit risk is also hypothesized in the literature as a factor influencing debt maturity. The risk variable (Hi Risk) is found to be insignificant except for 2000 consolidated data. This result is probably due to two reasons. First, the risk variable employed in this study reflects business risk rather than credit risk. Second, the relationship between debt maturity and credit risk is non-monotonic in nature (Diamond, 1991). Very low-risk firms borrow short-term to capitalize on the advantages of short-term financing. Very high-risk firms can only borrow short-term since no creditors are willing to offer longer maturities given their high risk of default. This results in the clustering of long-term borrowing among firms with intermediate credit risk.

Next, the maturity-matching hypothesis is tested. This hypothesis posits that firms match the maturity structure of their debt to the maturity structure of their assets. The ratio of fixed assets to total assets - a proxy for the maturity structure of assets – is found to be negatively related to the ratio of short-term debt to total debt. This is consistent with empirical findings in the literature, whereby firms with longer-maturity assets utilize longer-term debt than firms with a lesser amount of such assets (Stohs and Mauer, 1996; Ozkan, 2000; Demirgüç-Kunt and Maksimovic, 1999).

A firm's leverage position may affect the maturity structure of debt as well. Given that the leverage and maturity decisions may be simultaneously determined, firms that use more debt utilize that of longer maturity (Leland and Toft, 1996). The coefficient on the ratio of total debt to total assets is found to be significant and negative implying that firms that rely on more leverage have a smaller proportion of the short-term debt in their debt portfolios. Again, this finding is in line with other empirical findings (Stohs and Mauer, 1996; Scherr and Hulburt, 2001).

Firms with growth opportunities are expected to employ shorter term debt in an attempt to reduce the underinvestment problem (Myers, 1977). The growth opportunities proxy (capital expenditures to total assets ratio) is insignificant across all specifications. This finding is not utterly aberrant given that empirical support for the premise of short-term debt as mitigator of the underinvestment problem for firms with high growth opportunities has been mixed. Some researchers have found support for this premise (Barclay and Smith, 1995; Guedes and Opler, 1996; Ozkan, 2000), while others have not

(Stohs and Mauer, 1996, Scherr and Hulburt, 2001). Furthermore, results seem to vary based on the growth opportunities proxy being used<sup>60</sup>.

Informational asymmetries are another factor that may help explain the maturity structure of debt. The problem of informational asymmetries stems from the inability of the entrepreneur to convey the true nature of the firm to suppliers of funds. Two strands of ideas in the literature attempt to explain the role that asymmetrical information may have regarding the maturity choice. The first strand focuses on short-term debt being a costly signal that only superior-quality firms can afford. Thus, short-term debt can serve as a signal separating good-quality from bad-quality firms (Flannery, 1986). The second strand assumes that a “separating equilibrium” may not necessarily occur. Short-term debt, in that case is used to minimize the loss of shareholder wealth stemming from information asymmetries (Barnea, Haugen and Senbet, 1980). Both strands lead to the expectation that higher levels of informational asymmetries will be associated with higher levels of short-term debt<sup>61</sup>. The results reported in Tables 12 and 13 are opposite to what is postulated in the literature. The information asymmetry proxy (residual of regression of PRESENCE on Herfindahl index and ADR) is positive and significant. Firms with higher values of that residual, i.e., lower informational asymmetries, utilize shorter maturity debt. This different finding can be attributed to several reasons, the first

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<sup>60</sup> Significance of the relationship between growth opportunities and debt maturity depends on the proxy being used for the former variable. Significant results correspond to the ratio of the market value of a firm’s assets to the book value of these assets proxying for growth opportunities. Results do not seem to be consistent once other proxies are used. When spending on intangibles (advertising and R&D) represents growth options, Stohs and Mauer (1996) find a significant positive relationship between intangibles spending and the use of short-term debt, while Guedes and Opler (1996) do not.

<sup>61</sup> This association is not postulated by all theoretical models investigating the relationship between debt maturity and information asymmetries. Goswami, Noe and Rebello (1995) develop a model where the maturity of debt, among other features, is a function of the degree of asymmetric information concerning short and long-term cash flows. Short-term debt will be utilized only when the “asymmetry of information is uniformly distributed across dates.”

of which may relate to the appropriateness of the information proxy used<sup>62</sup>. Second, taking into consideration the “temporal distribution” of information asymmetries implies different associations between informational asymmetries and the debt maturity choice (Goswami, Noe and Rebello, 1995). Longer maturity debt is hypothesized to be used in situations where informational asymmetries increase over time, a circumstance which may be characteristic of emerging market environments. Last, the literature addresses the features of corporate bonds as a mechanism to resolve informational asymmetries. The debt maturity discussion in this study focuses on the debt supplied by banks and financial institutions<sup>63</sup>, in which case informational asymmetries between creditors and managers are expected to be less severe. It is also not clear whether the above theoretical models can be extended to address these types of asymmetries.

The above results, in general, support the conclusion that factors found to influence debt maturity in the U.S. corporate environment<sup>64</sup> play similar roles within the Chilean context.

To test Hypothesis 1b and investigate the role that ownership variables may play in the debt maturity decision, two variables are used: FAMILY (dummy given the value

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<sup>62</sup> There is only one study that utilizes a similar proxy. Mitchell (1991) uses a binary variable reflecting whether the bond-issuing firm is traded on the New York Stock Exchange (NYSE) and included in the S&P 400 Industrials. Nevertheless, Mitchell’s findings support the information hypothesis, whereby firms that did not trade on the NYSE and were not S&P 400 firms were more likely to issue medium- and short-term debt.

<sup>63</sup> Corporate bond information could not be used in the analysis for the following reasons. First, only long-term bond issues are reported in the *Economática* database. Second, the long-term bond information is available only for 16 and 13 sample firms in 2001 and 2000, respectively. Furthermore, it is not clear whether absence of that information for other firms reflected missing values or the nonexistence of long-term bond issues.

<sup>64</sup> Taxes have been also hypothesized to play a role in determining debt maturity. Theoretical models have generally suggested firms with higher effective tax rates will issue longer-term debt (Brick and Ravid, 1985). Because of the limitation that this study has regarding the tax figure, a tax variable is not included in the analysis. This, however, is not expected to impact or alter the results significantly given the poor empirical support for the tax hypothesis (Barclay and Smith, 1995; Guedes and Opler, 1996; Ozkan, 2000; Scherr and Hulburt, 2001).

of one when a controlling family/coalition is identified) and an interaction variable (FAMILY \*CEO) indicating whether a family member holds the CEO position in the firm. Results reported in Tables 12 and 13, specification (1), indicate that family-controlled firms have on average significantly lower short-term to total debt ratios. This finding provides strong support to hypothesis H1b, whereby the reduction in the agency costs of debt stemming from the incentive effects does not require as much reliance on short-term debt to mitigate such costs. To further investigate this issue, the interaction variable (FAMILY\*CEO) is added in specification (2). Firms where family members are active participants in the management of the firm are expected to further have lower incentive-related debt agency costs relative to those firms where family participation is less. The coefficient of the interaction variable is significant and negative indicating that family firms where CEO positions are held by family members have a lower proportion of short-term debt relative to total debt. This finding further supports H1b. Managerial participation through control of the board of directors, however, is not associated with lower levels of short-term debt, and, thus, does not seem to be indicative of lower agency costs of debt (results not reported).

The fit of all specifications reveals high significance. The adjusted R-squared ranges from 24 to 49 percent, in line with the explanatory power of other empirical models investigating the debt maturity choice.

**Table 12**  
**Regression Results**  
**Total Sample**

$$y = 2001 \text{ short-term debt to total debt ratio}$$

This table reports results of regressing debt maturity on family ownership. Debt maturity is measured as the book value of short-term debt divided by the book value of total debt. Family firms (FAMILY) are firms where control by a family or coalition of individuals is maintained. Ln (Total assets) is the natural log of total assets. Hi Risk is a dummy that equals one when the 3-year standard deviation of EBIT/Total assets exceeds the median value. Fixed assets/Total assets is the book value of fixed assets divided by total assets. Capital expenditures/Assets is capital expenditures divided by total assets. Information is the residual of the regression of PRESENCE on the Herfindahl index and ADR. FAMILY\*CEO is an interaction variable for family firms who have a family member holding the CEO position. *p*-values are reported in parentheses.

Variable (expected sign)	Non-Consolidated		Consolidated	
	(1)	(2)	(1)	(2)
Constant	258.04 (.000)	239.61 (.000)	245.072 (.000)	257.475 (.000)
Ln (Total Assets) (-)	-14.19 (.000)	-13.214 (.000)	-11.966 (.000)	-13.119 (.000)
Hi Risk (+)	2.172 (.771)		3.192 (.611)	
Fixed Assets/Total Assets (-)	-.45 (.013)	-.319 (.031)	-.518 (.003)	-.543 (.000)
Total debt/Total Assets (-)	-.21 (.394)		-.304 (.185)	-.249 (.237)
Capital expenditures/Assets (+)	.000 (.652)		-.239 (.698)	
Information (-)	.266 (.052)	.174 (.172)	.272 (.023)	.281 (.013)
FAMILY (-)	-19.941 (.025)	-17.684 (.042)	-18.629 (.018)	-12.096 (.097)
FAMILY*CEO (-)		-11.835 (.145)		-15.5 (.019)
Observations	79	87	73	75
R-squared	.357	.284	.496	.533
Adjusted R-squared	.294	.24	.44	.491
F-statistic	5.63 (.000)	6.43 (.000)	9.13 (.000)	12.92 (.000)



**Table 13**  
**Regression Results**  
**Total Sample**

$$y = 2000 \text{ short-term debt to total debt ratio}$$

This table reports results of regressing debt maturity on family ownership. Debt maturity is measured as the book value of short-term debt divided by the book value of total debt. Family firms (FAMILY) are firms where control by a family or coalition of individuals is maintained. Ln (Total assets) is the natural log of total assets. Hi Risk is a dummy that equals one when the 3-year standard deviation of EBIT/Total assets exceeds the median value. Fixed assets/Total assets is the book value of fixed assets divided by total assets. Capital expenditures/Assets is capital expenditures divided by total assets. Information is the residual of the regression of PRESENCE on the Herfindahl index and ADR. FAMILY\*CEO is an interaction variable for family firms who have a family member holding the CEO position. *p*-values are reported in parentheses.

	Non-Consolidated		Consolidated	
	(1)	(2)	(1)	(2)
Constant	255.456 (.000)	244.763 (.000)	187.352 (.000)	177.069 (.000)
Ln (Total Assets) (-)	-13.881 (.000)	-13.57 (.000)	-8.852 (.001)	-9.6 (.000)
Hi Risk (+)	-5.773 (.372)		10.891 (.086)	11.405 (.063)
Fixed Assets/Total Assets (-)	-.296 (.104)	-.248 (.088)	-.216 (.214)	
Total debt/Total Assets (-)	-.609 (.017)	-.646 (.009)	-.532 (.037)	-.556 (.063)
Capital expenditures/Assets (+)	-.401 (.771)		-.484 (.456)	
Information (-)	.209 (.097)	.166 (.17)	.051 (.653)	
FAMILY (-)	-13.26 (.107)	-9.388 (.253)	-12.006 (.141)	-7.37 (.345)
FAMILY*CEO (-)		-14.276 (.061)		-12.84 (.057)
Observations	79	85	73	74
R-squared	.373	.358	.437	.455
Adjusted R-squared	.311	.308	.377	.415
F-statistic	6.04 (.000)	7.24 (.000)	7.22 (.000)	11.37 (.000)

## CHAPTER VI

### CONCLUSIONS

One of the main objectives of this study is to better understand the role that ownership structure may play in influencing the financing policies of the firm. This is addressed within an institutional and organizational framework that is different from the typical atomistic shareholder environment in the United States. The Chilean context with its extremely high levels of concentrated ownership and its strong familial presence has aided in understanding some aspects of that relationship.

Table 14 restates the hypotheses targeted by this study and summarizes the support or lack of it for each. While not every hypothesis is supported by the empirical findings, the following conclusions can be drawn regarding the relationship between ownership and capital structures within the Chilean context:

- Debt helps families maintain control by providing a financing source that enables owners to overcome their wealth constraints without having to dilute their ownership stakes. However, it is one of several mechanisms utilized to serve this purpose; in the presence of alternative methods to maintain control, namely pyramiding, the role of debt is de-emphasized<sup>65</sup>.

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<sup>65</sup> This finding is consistent with ongoing research that attempts to analyze the control function of debt relative to other control mechanisms within different institutional contexts (Holmén, Knopf and Peterson, 2002; Nilsson, 2002). Both studies use the Swedish corporate environment as the backdrop of their analysis and focus on dual class shares as the alternative control mechanism.

- Group affiliation is a significant determinant of the debt levels of Chilean firms.

However, contrary to conventional wisdom, group membership is not associated with higher levels of leverage. This finding points to the important changes in the institutional context within Chile over the past two decades and how these changes may have impacted the financial role of industrial groups. The rapid development of Chile's equity markets as well as the ability of Chilean firms to tap world financial markets may be among the main reasons for the above observation.

**Table 14**  
**Summary of Results**

<i>Hypothesis</i>	<i>Empirical Support</i>
<i>H1a: Family/owners-controlled firms will exhibit a higher level of leverage.</i>	Strong support: Family-controlled firms are generally more leveraged than non-family firms. Their debt maturity is also longer.
<i>H1b: Family/owners-controlled firms will exhibit a lower level of short-term debt.</i>	Strong support: Family-controlled firms utilize less short-term debt in their debt portfolios.
<i>H2a: Firms that are affiliated with a group will exhibit higher levels of leverage.</i>	No support: On the contrary, firms that are members of large groups utilize significantly lower debt in their capital structures.
<i>H2b: Group members whose group includes a bank will exhibit higher levels of leverage.</i>	Moderate support: The presence of a bank within a group increases the leverage of the firm, though significance is not found across all specifications.
<i>H3: After controlling for a firm's profitability, firms with higher levels of informational asymmetries will exhibit higher levels of debt.</i>	Strong support: Firms which trade less frequently (i.e., having higher informational asymmetries), report higher levels of debt.
<i>H4: Family firms with free cash flow and low investment opportunities will use less debt.</i>	No support: The proxy for free cash flow is insignificant across all specifications.
<i>H5: Family-controlled firms with higher levels of business risk will utilize less debt.</i>	Weak support.
<i>H6a: Family-controlled firms with dual class shares will exhibit similar levels of leverage to firms with single-class shares.</i>	Strong support: The issuance of dual-class shares does not affect the leverage of the firm.
<i>H6b: Family-controlled firms with extensive pyramiding structures will exhibit lower levels of leverage.</i>	Moderate support: Firms with higher levels of separation between cash flow and control rights have lower levels of leverage.

- Agency costs of equity are more pronounced for firms characterized by high levels of informational asymmetries. This is manifested by the higher reliance of these firms on debt as a source of financing.
- The general consensus that debt serves an important governance function is not supported in this study. The unique characteristics of the Chilean corporate environment are behind this lack of support.

The main contributions of this research are manifold. First, the study serves the purpose of confirming the validity of capital structure and debt maturity structure theories within a different context than that where these theories were developed. The results generally support the postulated relationships hypothesized in the literature and add to the body of empirical evidence supporting these relationships. Second, this analysis furthers one's understanding of ownership structure in a different corporate environment. The thorough evaluation of ownership dynamics that goes beyond retrieving database-supplied ownership information brings forth the need to adopt different measurement techniques when dealing with an institutional and organizational framework that is quite different from the typical U.S. corporate environment with its dispersed ownership, strong market for corporate control and "superior" governance structure. Deeper and more thorough analysis is required to unveil the various dimensions of ownership within each environment. This in turn, can help reveal new and interesting patterns through which our classical expectations are challenged. Finally and to the best of my knowledge, this study is the first to explore the role that ownership variables may play in determining the maturity structure of debt. The evidence indicating that families serve an agency-reducing function, manifested by their lower use of short-term debt, is among the first

empirical examinations of Barnea, Haugen and Senbet's (1980) view that the maturity structure of debt is a function of managerial (stockholder) risk incentives. The interesting finding is that the family's role in reducing the incentive effects does not affect the capital structure of the firm but rather the maturity structure of the firm's debt.

Similar to all studies, this research is haunted by several limitations. The narrow sample period is among the first weak points of the analysis. Observations spanning over two years may not be representative of the relationship between capital and ownership structures and may, thus, hinder the general applicability of the results. This was dictated by the availability of data and by the preponderance of missing values for prior years. Database coverage for developing countries does not usually date back beyond the nineties, and only recent years have witnessed a more complete coverage of these countries. Only the passage of time will enable researchers to conduct more meaningful studies that span longer periods of time.

The use of one country may also be presented as a similar shortcoming. However, given the unique ownership features that were depicted in this analysis, other countries to be considered had to have similar corporate ownership structures. Candidates would have included Mexico and Brazil, both of which presented serious problems of data availability and collection. Furthermore, one-country studies have their place in the finance literature and can help in shedding light on many institutional, organizational and cultural peculiarities that may be eclipsed when bundled up in multiple country research.

Another limitation may be the potential endogeneity of ownership structure. This issue has been raised several times in the literature (Kester, 1986; Jensen, Solberg and Zorn, 1992; Bathala, Moon and Rao, 1994). However, within the Chilean context, it may

be safe to assume that the ownership decision is exogenous rather than endogenous. Such an assumption can be based on the premise that in an environment characterized by high familial control, factors exogenous to the operations of the firm seem to exhibit higher influence in determining the outcome of ownership decisions. Furthermore, Jensen, Solberg and Zorn (1992) report “no evidence that financial policy is an important determinant of the stake insiders will have in a firm.” (p. 258).

Future research in this area can pursue several venues. Within the Chilean context, extending the time period of the analysis is the natural extension of this study. A formal evaluation of the determinants of ownership structure is another venue that is invaluable in furthering one’s understanding of this issue in this unique environment. Such evaluation will also shed light on the endogeneity issue between ownership and leverage variables. Case by case analysis of instances of major ownership changes and their effect on the leverage decision can also help expand our knowledge in this area.

The debt maturity issue and its relationship with ownership variables also offers a fertile ground for future research. First, alternative proxies regarding the classical determinants of debt maturity can be added in. The inclusion of a risk variable that captures the non-monotonic hypothesized relationship between credit risk and debt maturity and the investigation of alternative proxies for growth opportunities and informational asymmetries will render the results of this analysis more reliable and comparable with other studies in the literature. Another enhancement regarding the maturity choice methodology is the utilization of a simultaneous equation model to tackle the simultaneity between the leverage and debt maturity decision. Finally, the investigation of multiple dimensions of ownership and their effect on debt maturity can

**also improve the results of this study; institutional ownership and foreign ownership may be two such dimensions with agency-related effects.**

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**APPENDIX A**

**SAMPLE**

## APPENDIX A

### SAMPLE

#### *A. Sample Construction*

The Económica data base has 317 entries including multiple entries for the same company if it has dual or ADR shares.

1. All cancelled stocks as of Dec. 2001 were deleted. This included the following firms: La Cartuja, Mainstream, Penta, Pesquenac, Bice, Edwards, Ohch, Almendros, Emec, Enerquinta, Luz y Fuerza, Polar, Chispa Uno, Chispa Dos, Planvital, Mantos, Michilla, Edelayesen, Maderas, Vrtel, Transnet, Texvina, and Unimarc (25 entries, 23 firms). The only exception to this was LabChile which was cancelled in 2002. It was kept in the analysis because it was still listed on Dec. 31, 2001 on the Chilean Bolsa's website. The cancellation is primarily due to the acquisition of the company by IVAX (U.S. firm). The latter launched a tender offer on May 31, 2001 for a minimum of 80 percent and up to 100 percent of the company's shares of common stock. The offers closed on June 29, 2001. The ownership structure and the board of directors at the end of 2001 reflect this acquisition with Inversiones Glacier I (Chilean subsidiary of IVAX) owning 80 percent of the shares. Sample: 291.

2. Firms in the following economic sectors were deleted: Banks and Finance (22 entries), Funds (42 entries), Electric Power (21 entries), Oil and Gas (2 entries), other with the exception of seven firms<sup>66</sup> (66 entries), and Telecommunication (13 entries). Sample: 126.
3. Other firms were further excluded for the following reasons:
  - a. State participation (Carvile, Enacar, Zofri).
  - b. Matelsa: Although the economic sector is agriculture in Economatica and “agropecuarias and forestales” on the Bolsa, the firm goes by another name Comatel whose objective is “to carry out in real estate and in all types of securities” (Bolsa de Santiago). Further more, Comatel is a subsidiary of Quinenco whereby the latter company identifies the former as an investment company. Further investigation of the financial statements of Matelsa on Fecu revealed accounting items that were more compatible with the reporting of an investment rather than an industrial firm.
  - c. Multiple entries (ADR, different classes) per firm were eliminated.
4. The industry classification of one firm, CTI, was changed from “electric electronics” to “basic and fabricated metal.”<sup>67</sup>

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<sup>66</sup> The “other” category in the Economatica database referred mostly to firms in the “inversiones y inmobiliarias” industry class according to the Bolsa de Santiago’s classification. However, the seven firms included in the analysis were in non-financial sectors namely productos diversos (Cochrane), productos quimicos and construccion. Checking the individual companies’ websites further confirmed the decision to include these firms in the analysis.

<sup>67</sup> CTI is a firm specializing in the production of household appliances. Given that it was the only firm the “electric electron” category in Economatica and that the Chilean Bolsa included it in the “metalmecanicas” category whose firms corresponded mostly to the “basic and fab metal” Economatica class, the decision to

*B. Missing data*

The following is a detailed description of the process and sources of filling out missing values for each firm in the sample.

*Anasac*

## Non-consolidated

- D/SE01, TD/TA01, SD/TD01, long-term liabilities, long-term debt: average of 3/01 and 6/02 figures (Economatica).

*Agricultor*

## Non-consolidated

- Tax rate00 was 200 percent! The 9/00 figures (Bolsa) were substituted to calculate this measure and yielded a negative 1.3 percent<sup>68</sup>.

*Agunsa*

## Non-consolidated

- SD01: average of 9/01 and 3/02 figures (Economatica).

## Consolidated

- SD01: average of 9/01 and 3/02 figures (Economatica).

*Bata*

## Non-consolidated and Consolidated

- LD01,00: set equal to zero since SD/TD01,00 was 100.

*Cap*


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include it in the latter class was made. Furthermore, one of CTI's affiliates, Somela, is classified by the Bolsa as "metalmecanicas."

<sup>68</sup> There was a lot of discrepancy between Economatica and the Bolsa's numbers when it came to the tax figures. The discrepancy mainly pertained to opposite signs in the two databases. This brings into question the credibility of results regarding the tax effect.

**Non-consolidated**

- **SD00: average of 6/00 and 3/01 values (Economatica).**

**Consolidated**

- **SD00: average of 6/00 and 3/01 values (Economatica).**

***Carampang*****Non-consolidated**

- **TA01: 9-2001 figure (Bolsa).**
- **TA95: average of TA12/94 and TA3/96 (Economatica).**
- **D/SE01, ROA01, SD01 (short-term debt), FA/SE01, Income Tax 01, SE01, TaxInc01, TD/TA01, SD/TD01, LD01: 6/01 figures (Economatica).**
- **Operating Profit01, Long-term liabilities01: 9-01 figures (bolsa).**
- **Operating Profit95: average of operating profit 12/94 and operating profit 3/96 (Economatica).**
- **L/TA01: 9/01 ratio (bolsa).**
- **FA/TA01 figures were derived from FA/SE01 figure in Economatica. However, given a 101.677% value necessitated the calculation of this value from extracting the fixed assets figure and dividing it by total assets. Substituted value was 94.21.**

**Consolidated data is not available for Carampang. The non-consolidated data listed above was filled in for the missing values.**

***Carolina*****Non-consolidated**

- **SD01, SD/TD01: 9/01 figure (Economatica).**

- **LD01,00,99,98: set equal to zero given the 100 percent SD/TD ratio for the corresponding years.**

***Carozzi***

**Non-consolidated**

- **Rev01,00: 9/01, 9/00 values (Bolsa).**
- **SD00, SD99: calculated from the LD00,99 and SD/TD00,99 values (Economatica).**

***Cct***

**Non-consolidated and Consolidated**

- **LD01,00: set equal to zero since SD/TD01,00 was 100.**

***Cem***

**Non-consolidated**

- **ROA00, ROE00: 9/00 figures (Bolsa).**

**Consolidated**

- **ROA00: The ratio of consolidated ROA to non-consolidated ROA for the quarters ending 12/01, 3/02, and 6/02 is .76, .78, and .77, respectively (Economatica). This ratio is maintained in calculating the consolidated ROA00 from the non-consolidated ROA9/00 figure (Bolsa). Similar arrangements were taken for ROE00.**

***Cic***

**Consolidated**

- **LD01: average of 9/01 and 3/02 figures (Economatica).**

***Cocesa***

**Non-consolidated and Consolidated**

- LD01,00: set equal to zero since SD/TD01,00 was 100.

***Comviña*****Non-consolidated**

- TA01, Operating profit01, FA/SE01, SE01, Pretax income01, L/TA01, ROE01: average of 9/01 and 3/02 figures (Economatica).
- ROA01: 9/01 ratio (Economatica).
- Long-term liabilities01; 00: these figures were replaced with zeros since the abbreviated financial statements on the bolsa's website revealed no long-term liabilities for periods ending 9/01 and 9/00.

Consolidated data is not available for Comviña. The non-consolidated data listed above was filled in for the missing values.

***Coresa*****Non-consolidated**

- Income tax01: 9/01 value (Bolsa).

***Corpesca***

Ownership data: 2001 data was retrieved from the Bolsa's website. 2000 data was retrieved from Fecu.

**Non-consolidated**

- ROA01; ROA00: utilidad del ejercicio/total activos 9/01 and 9/00 respectively (Bolsa).
- Operating profit01;00: resultado de explotación<sup>69</sup> 9/01,9/00 figures (Bolsa).

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<sup>69</sup> Cross checking *Económica* financial statements for other companies with those of the Bolsa confirmed that "resultado de explotación" in the latter corresponded exactly to "operating profits" in the former.



- Short-term debt01, capital expenditures01, D/SE01: 6/02 figure (Economatica).
- FA/TA01,00, SE01,00, Long-term liabilities01,00, Pretax income01,00, Income tax01,00, L/TA01,00, TA01,00: 9/01 and 9/00 figures (Bolsa).
- Revenues01,00: ingresos de explotacion 9/01,9/00 (Bolsa).
- TD/TA01: Average of TD/TA 6/02 ratio (Economatica) and “Obligaciones con bancos e instituciones financieras/total activos” 6/01 ratio (Fecu). Equivalence confirmed.
- LD01, SD/TD01, Long-term bonds: average of 6/02 figures (Economatica) and 6/01 figures (Fecu).
- ROE01,00: utilidad del ejercicio/total patrimonio 9/01 and 9/00 respectively (Bolsa).

**Consolidated data:** Since Corpesca is a subsidiary, no attempts were made to fill in the missing data.

***Cti***

**Non-consolidated and Consolidated**

- LD01: set equal to zero since SD/TD01 was 100.

***Edelpa***

**Non-consolidated and Consolidated**

- LD00: set equal to zero since SD/TD00 was 100.

***Embonor***

**Consolidated**

- SD01: average of 9/01 and 3/02 figures (Economatica).

***Emiliana***

**Non-Consolidated**

- SD01: Average of 6/01 and 6/02 figures (Economatica).
- SD00: 9/00 figure (Economatica).

Consolidated data is not available for Emiliana. The non-consolidated data listed above was filled in for the missing values.

*Eperva***Non-consolidated**

- D/SE01: consolidated ratio – 1, since that trend was confirmed for the quarters 9/98 through 9/01 (Economatica).
- Long-term liabilities01, TD/TA01, SD/TD01, LD01: consolidated figure, since that trend was confirmed for the quarters 3/95 through 9/01 (Economatica).
- Income tax01,00: 9/01, 9/00 figures (Bolsa).
- Capital expenditures01,00: 01, 00 consolidated figures were used since these figures were more or less similar to the non-consolidated figures over the period 6/96-12/99.

*Falabella***Consolidated**

- Capital expenditures00: average of cap exp9/00 and 3/01 (Economatica).

*Fosforos***Non-consolidated**

- LD01: set equal to zero since SD/TD01 was 100.

*GE Chile***Non-consolidated and Consolidated**

- LD01,00: set equal to zero since SD/TD01,00 was 100.

### *Indalum*

#### **Non-consolidated and Consolidated**

- LD01,00: set equal to zero since SD/TD01,00 was 100.

### *Inforsa*

#### **Non-consolidated**

- SD00: 9/00 value (Economatica).

#### **Consolidated**

- SD00: 9/00 value (Economatica).

### *Iquique*

#### **Non-consolidated**

- Income tax01, 00: 9/01, 9/00 values (Bolsa).

#### **Consolidated**

- Income tax00: average of 6/00 and 3/01 figures (Economatica).

### *Kopolar*

#### **Non-consolidated**

- SD/TD01: average of 6/01 and 6/02 values (Economatica).

#### **Consolidated**

- LD01: set equal to zero since SD/TD01 was 100.

### *LabChile*

#### **Non-consolidated**

- TA01, D/SE01, ROA01, operating profit01, short-term debt01, FA/SE01, SE01, long-term liabilities01, income tax01, pretax income01, revenues01, TD/TA01, L/TA01, SD/TD01, ROE01,: 9/01 figures (Economatica).
- RevChange01: % change in net operating revenues over the period 9/00-9/01 (Economatica).
- LD01-98, 96: given a value of zero since the short-term debt to total debt ratio is 100 percent for those years.
- Capital expenditures01: 9/01 value (Economatica).

#### **Consolidated**

- TA01, D/SE01, ROA01, operating profit01, short-term debt01, FA/SE01, SE01, long-term liabilities01, income tax01, pretax income01, revenues01, TD/TA01, L/TA01, SD/TD01, ROE01, LD01, capital expenditures01: 9/01 figures (Economatica).
- Capital expenditures00: 9/00 value (Economatica).

#### ***Lirquen***

#### **Non-consolidated and Consolidated**

- LD01,00: set equal to zero since SD/TD01,00 was 100.

#### ***Luchetti***

#### **Non-consolidated**

- SD/TD01: average of 9/01 and 3/02 figures (Economatica).

#### ***Melon***

#### **Non-consolidated**

- LD01,00: set equal to zero since SD/TD01,00 was 100.

- **Capital expenditures00: 3/01 figure (Economatica).**

**Consolidated**

- **Capital expenditures00: 3/01 figure (Economatica).**
- **LD01,00: set equal to zero since SD/TD01,00 was 100.**

***Muelles***

**Non-consolidated**

- **SD00: average of 9/00 and 3/01 figures (Economatica).**
- **Capital expenditures00: 3/01 figure (Economatica).**

**Consolidated data is not available for Muelles. The non-consolidated data listed above was filled in for the missing values.**

***Paris***

**Non-consolidated**

- **FA/SE01,00, Rev01,00: 9/01, 9/00 figures (Bolsa).**

**Consolidated**

- **SD01: average of 9/01 and 3/02 figures (Economatica).**

***Penon***

**Non-consolidated**

- **FA/SE01,00, rev01,00: 9/01, 9/00 figures (Bolsa).**
- **Income tax01: 9/01 figure (Economatica).**

***Puerto***

**Non-consolidated and Consolidated**

- **LD01,00: set equal to zero since SD/TD01,00 was 100.**

***Santana***

**Non-consolidated**

- Long-term liabilities01,00: 9/01, 9/00 figures (Bolsa). Values were zero.
- LD01,00: set at zero.

**Consolidated**

- Long-term liabilities01: non-consolidated value above was used. Inspecting the consolidated and non-consolidated numbers available on Economatica revealed no differences.

*Schwager:***Non-consolidated**

- TA01, D/SE01, operating profit01, SD01, FA/SE01, SE01, long-term liabilities01, pretax income01, revenues01, TD/TA01, SD/TD01, LD01, capital expenditures01: average of 3/01 and 3/02 figures (Economatica).
- ROA01, ROE01: 3/01 figure (Economatica).
- LD00: zero since 12/00 SD/TD=100.
- FA/TA01 figures were derived from FA/SE01 figure in Economatica. However, given a higher than 100% value necessitated the calculation of this value from extracting the fixed assets figure and dividing it by total assets. Substituted value was 90.1.

Consolidated data is not available for Schwager. The non-consolidated data listed above was filled in for the missing values.

*Siemel (Inversiones Siemel S.A.):* Although this firm is listed under agriculture, it is its subsidiary Agricola Siemel that is actually in that sector. Inversiones Siemel is more of

an investment company with investments in the insurance, agriculture, real estate, information technology services and business services sectors.

#### Non-consolidated

- Long-term liabilities<sup>01,00</sup>: 9/01, 9/00 figures (Bolsa). Values were zero.
- LD<sup>01,00</sup>: set at zero.

#### *Somela*

#### Non-consolidated and Consolidated

- LD<sup>01,00</sup>: set equal to zero since SD/TD<sup>01,00</sup> was 100.

#### *Sta Isabel*

#### Non-Consolidated

- Capital expenditures<sup>00</sup>: average of 9/00 and 3/01 figures (Economatiaca).

#### Consolidated

- Capital expenditures<sup>00</sup>: average of 9/00 and 3/01 figures (Economatiaca).

#### *Sti*

“[D]ue to the vertical integration restrictions established by the Chilean concessions system, part ownership of the San Antonio port terminal "San Antonio Terminal Internacional S.A." (STI) was sold to "SSA Holdings International Chile Ltda." (SSA) ... In addition, long-term financing in the amount of US\$ 100 million was obtained by STI from the ... International Finance Corporation – IFC ... who also became part-owner of this port terminal with a 9% share, SAAM retaining 40% ownership and SSA holding the remaining 51%” (Source: Vapores 2001 annual report; SAAM refers to *Sudamericana Agencias Aéreas y Marítimas S.A.*, a fully-owned subsidiary of Vapores).

**Ownership data:** 2001 data was retrieved from the Bolsa's website. 2000 data was retrieved from the 2000 and 2001 annual reports of Vapores, the parent of one of the owners (SAAM) of Sti.

**Non-consolidated**

- TA00, operating profit00, FA/SE00, SE00, long-term liabilities00, income tax00, pretax income00, L/TA00: Average of 9/00 figure (Bolsa) and 3/01 figures (Economatica).
- D/SE00, SD00, TD/TA00, SD/TD00, LD00, capital expenditures00: 3/01 figure (Economatica).
- SDV3-01: Although this reflects the 3-year standard deviation of EBIT/TA, only two 2001 and 2000 figures were included to calculate this variable since the company started operation on Jan. 1<sup>st</sup>, 2000.
- ROA00, ROE00: 9/00 figure (Bolsa).
- Revenues00: 9/00 figure (Bolsa). Although the 3/01 figures were available, an average was not taken since it was obvious from the 2001/2002 data in Economatica that there was a significant seasonal trend in revenues, whereby the first quarter revenues represented around 25 percent of last quarter revenues.

**Consolidated data:** Since Sti is a subsidiary, no attempts were made to fill in the missing data.

***Tres Mares***

There is a gap in Economatica's data on Tres Mares that extends from 9/97 till 6/02 (exclusive). Ownership data for 2001 was retrieved from the Bolsa's website.

**Non-consolidated**



- TA01, ROA01, operating profit01, FA/SE01, SE01, long-term liabilities01, income tax01, pretax income01, revenues01, L/TA01, ROE01: 9/01 figures (Bolsa).
- TA00, ROA00, operating profit00, FA/SE00, SE00, long-term liabilities00, income tax00, pretax income00, revenues00, L/TA00, ROE00: 9/00 figures (Bolsa).

**Consolidated data:** Since the main source of missing data on Tres Mares is the Bolsa which reports non-consolidated figures, the non-consolidated data was used in place of the missing data. Tres Mares reports the presence of two fully-owned subsidiaries and two subsidiaries with less than 20 percent ownership in the “permanent investments section”. Looking at the Economatica data for the period March 96 through Sept. 97 reveals that no consolidated data is available. For the quarter ending 6/02, Tres Mares reports both consolidated and non-consolidated financial statements. Looking at these statements reveals minimal discrepancies in the aggregate consolidated and non-consolidated figures. This partially supports the decision to use the above non-consolidated figures as proxies for consolidated values.

#### *Ventanas*

##### **Non-consolidated**

- SD01: 9/01 figure (Economatica).

##### **Consolidated**

- SD01: 9/01 figure (Economatica).

#### *Viconto*

##### **Non-consolidated and Consolidated**

- LD01,00: set equal to zero since SD/TD01,00 was 100.

### *Victoria*

#### **Non-consolidated**

- D/SE01, short-term debt01, TD/TA01, SD/TD01: average of 6/01 and 3/02 figures (Economatica).
- Long-term liabilities01: average of 9/01 figure (Bolsa) and 3/02 figure (Economatica).
- LD01,00: set equal to zero since SD/TD01,00 was 100.

#### **Consolidated**

- SD01, TD/TA01, SD/TD01: average of 6/01 and 3/02 figures (Economatica).
- Long-term liabilities01: average of 6/01 figure and 3/02 figure (Economatica).
- LD01,00: set equal to zero since SD/TD01,00 was 100.

### *Volcan*

#### **Non-consolidated**

- SD00: average of 9/00 and 3/01 figures (Economatica).

#### **Non-consolidated**

- SD00: average of 9/00 and 3/01 figures (Economatica).

Despite the above attempts to bolster sample size, there were still missing data for which no values could be reasonably substituted.

### *C. Subsidiaries*

**A firm is identified as a subsidiary if it meets one of the following criteria:**

- **The firm is listed as a subsidiary (filial) on the website of the parent company.**

- The firm is listed in the “permanent investments” category of a parent company on the Bolsa’s website with a block ownership exceeding 20 percent.

To confirm the soundness of the above criteria, some consolidated financial statements included the names of firms incorporated in the consolidation. Cross-checking resulted in no discrepancies.

Fasa is included in the permanent investments of Falabella with an ownership stake of 20 percent. However, after investigating the annual reports of Falabella, there was evidence that Fasa was not included in the preparation of consolidated statements for Falabella.

Cintac: Cap has only 11 percent direct ownership in Cintac. However, after incorporating the indirect holdings, this percentage jumped to almost 26 percent. Thus, Cintac was considered a subsidiary of Cap.

#### *D. Exchange rate*

Since the Bolsa’s data was given in Chilean pesos, the website for the Chilean Central Bank was consulted to determine exchange rates for Dec. 2000. Cross checking between Economatica and Fecu for non-missing values revealed that the average exchange rate in Dec. of 2000 (524.67 pesos/dollar) as well as the average exchange rate for all of 2000 (513.73) was not the one used by Economatica to convert peso values into dollars. The exchange rate used was 573.9 pesos to the dollar. For consistency, this value was used to convert Fecu peso values into dollar values.

**APPENDIX B**  
**TABLES AND FIGURES**

**APPENDIX B**  
**TABLES AND FIGURES**

**Table B1**  
**Creditor Rights around the World**

Country Group	No Automatic Stay on Assets	Secured Creditors First Paid	Restrictions for Going into Reorganization	Management Does Not Stay in Reorganization	Creditor Rights	Legal Reserve Required as a Percentage of Capital
English-origin average <sup>1</sup>	.72	.89	.72	.78	3.11	.01
German-origin average <sup>1</sup>	.67	1.00	.33	.33	2.33	.41
Scandinavian-origin average <sup>1</sup>	.25	1.00	.75	.00	2.00	.16
French-origin average <sup>1</sup>	.26	.65	.42	.26	1.58	.21
Latin American Sub- Category <sup>2</sup>	.13	.56	.38	.25	1.25	.26
Chile	.00	1.00	1.00	.00	2.00	.20

<sup>1</sup>Source: La Porta et al. (1998), pp. 1136-37.

<sup>2</sup>The numbers were calculated as the averages of the scores for Latin American countries in La Porta et al. (1998). The Latin American countries are: Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, Uruguay and Venezuela.

**Table B2**  
**Rule of Law**

Country Group	Enforcement Variables					Accounting: Rating on Accounting Standards
	Efficiency of Judicial System	Rule of Law	Corruption	Risk of Expropriation	Risk of Contract Repudiation	
English-origin average <sup>1</sup>	8.15	6.46	7.06	7.91	7.41	69.62
German-origin average <sup>1</sup>	8.54	8.68	8.03	9.45	9.47	62.67
Scandinavian-origin average <sup>1</sup>	10.00	10.00	10.00	9.66	9.44	74.00
French-origin average <sup>1</sup>	6.56	6.05	5.84	7.46	6.84	51.17
Latin American Sub- Category <sup>2</sup>	6.47	5.18	5.22	6.76	6.11	46.25
Chile	7.25	7.02	5.30	7.50	6.80	52.00

<sup>1</sup>Source: La Porta et al. (1998), pp. 1142-43.

<sup>2</sup>The numbers were calculated as the averages of the scores for Latin American countries in La Porta et al. (1998). The Latin American countries are: Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, Uruguay and Venezuela.

**Table B3**  
**Shareholder Rights around the World**

Country Group	One Share- One Vote	Proxy by Mail Allowed	Shares Not Blocked before Meeting	Cumulative Voting/ Proportional Representation	Oppressed Minority	Preemptive Right to New Issues	Percentage of Share Capital to Call an Extraordinary Shareholder Meeting	Antidirector Rights	Mandatory Dividend
English-origin average <sup>1</sup>	.17	.39	1.00	.28	.94	.44	.09	4.00	.00
German-origin average <sup>1</sup>	.33	.00	.17	.33	.50	.33	.05	2.33	.00
Scandinavian-origin average <sup>1</sup>	.00	.25	1.00	.00	.00	.75	.10	3.00	.00
French-origin average <sup>1</sup>	.29	.05	.57	.29	.29	.62	.15	2.33	.11
Latin American Sub- Category <sup>2</sup>	.44	.00	.67	.44	.44	.78	.18	2.67	.22
Chile	1.00	.00	1.00	1.00	1.00	1.00	.10	5.00	.30

<sup>1</sup> Source: La Porta et al. (1998), pp. 1130-31.

<sup>2</sup> The numbers were calculated as the averages of the scores for Latin American countries in La Porta et al. (1998). The Latin American countries are: Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, Uruguay and Venezuela.

**Table B4**  
**Takeover Provisions<sup>1</sup>**

	<b>Takeover Rules Index<sup>2</sup></b>	<b>Charter Provision Index<sup>3</sup></b>
<b>Common law countries</b>	0.61	0.95
<b>Scandinavian tradition civil law countries</b>	0.53	0.87
<b>German tradition civil law countries</b>	0.33	1.24
<b>French tradition civil law countries</b>	0.13	1.32
<b>Latin American countries<sup>4</sup></b>	0.00	1.34
<b>Chile</b>	0.00	1.29

<sup>1</sup> Source: Nenova (2001), pp.47-48.

<sup>2</sup> The takeover rules index aggregates four indicator variables of investor protection during a corporate control contest: (1) whether, by law, all classes of shares are offered the same price in a tender offer, (2) whether, by law, the buyer of a large or majority block is required to pay the same price to minority shareholders, (3) whether a "squeeze out" provision exists, and (4) the level of ownership at which a dominant shareholder is legally required to make an open market bid for all shares (rescaled).

<sup>3</sup> The power-concentrating charter provisions index is an average of the following indicator variables: (1) whether there are special decision-making rights available to a shareholder or group and are unavailable to dispersed shareholders, (2) whether the firm does not have a charter provision that the limited-voting shares become convertible into multiple-voting at the time of a control change, (3) whether the firm has a poison pill provision, (4) whether there is an upper limit on the votes that a single shareholder can cast, (5) whether the Board of Directors has the power to limit transfer of shares, and (6) whether there are increased voting power rules for limited voting shares in case of an expropriation threat.

<sup>4</sup> The numbers were calculated as the averages of the scores for Latin American countries in Nenova (2001). The Latin American countries are: Brazil, Chile, and Mexico.



**Table B5**  
**Chilean Dual-Class Firms**

<b>Company</b>	<b>Classes of Shares</b>	<b>Voting Privileges</b>	<b>Board Election Privileges</b>	<b>Dividend Privileges</b>
Aguas Andinas	A			Same
	B			Same
<b>Embotelladora Andina</b>	A	Yes	6 members	
	B	No <sup>a</sup>	1 member	Extra 10%
Calichera <sup>b</sup>	A			
	B			
<b>Carolina</b>	A		7 members	Extra 5% <sup>c</sup>
	B		1 member	
Colcraig	A			
	B			
Country	A			
	B			
	P			
CTC	A	Yes	6 members	Same
	B	Yes	1 member	Same
<b>Embonor</b>	A	Yes	6 members	
	B	Yes	1 member	Extra 5%
Essbio <sup>d</sup>	A			Same
	B			Same
Essel <sup>d</sup>	A			Same
	B			Same
EsvaI	A	Yes <sup>e</sup>		Same
	B	Yes <sup>e</sup>		Same
Grange	A			
	B			
Hipodromo	A			Same
	B			Same
Indisa	A	Yes		Same
	B	No		Same
Portada	A			Different <sup>f</sup>
	B			Different <sup>f</sup>
<b>Pucobre</b>	A			Same
	B <sup>g</sup>			
	C			Same
	D			Same
<b>Rebrisa</b>	A			
	B			Extra 10 percent <sup>h</sup>
<b>SM-Chile<sup>i</sup></b>	A	One-share, 3.38-vote		None
	B	One-share, 3.38-vote		Same
	D	One-share, 3.38-vote		Same
	E	One-share, one-vote		Same
<b>SQM</b>	A	One-share, one-vote	7 members	Same
	B	One-share, one-vote	1 member	Same
Telex <sup>j</sup>	A	Yes	5 members	25.5% of dividend distributions
	B	Yes	4 members	74.5%

Source: Annual reports, 20-F forms, Bolsa de Comercio de Santiago, company websites, Economática, Feller-Rate.

Companies set in bold are those that are included in the final sample.

<sup>a</sup> Even though Class B shares have no voting power, the major owners of these shares are the same as those of Class A with more or less similar percentage ownership (See p. 74 of the 2001 20-F form).

<sup>b</sup> During the April 1997 special shareholders meeting the company's outstanding shares were established as the Class A common shares, while the preferred class B shares were created by distributing them as stock dividends.

<sup>c</sup> This is based on the Sept. 13<sup>th</sup>, 2001 and April 15, 2002 shareholders meetings where series A and B shareholders were awarded 4.21 (A) and 4.4205 (B) pesos per share, during the latter meeting and 6.25 (A) and 6.5625 (B) pesos per share during the former meeting (Economática).

<sup>d</sup> Essbio and Essel are two newly privatized companies specializing in the production and distribution of drinking water and the treatment of sewage water. Both firms still had state participation in 2001 through the *Corporacion de Fomento de la Produccion* (48 percent in Essbio and 38 percent in Essel). As of July 2002, the two companies merged into one.

<sup>e</sup> Both series have the same rights that the Law confers upon common shares of stock, with the exception of minimum percentages of quorum required for the approval of matters related to the rights of water exploitation or sanitary concessions.

<sup>f</sup> No particular pattern could be detected regarding the dividend distribution for class A and B shares from 1998 through 2002. Annual distribution differences ranged from zero percent to 168 percent.

<sup>g</sup> Class B shares were officially cancelled in March of 2002.

<sup>h</sup> Based on the April 27<sup>th</sup>, 2001 General Shareholders Meeting where a dividend of 0.15 and 0.165 pesos per share were distributed to Class A and Class B shareholders, respectively (Economática).

<sup>i</sup> Classes A, B, D and E constitute 4.3, 82.8, 3.2 and 1.3 percent, respectively, of the total voting rights.

<sup>j</sup> Telex's dual class configuration was the outcome of a major restructuring agreement between the firm and its creditors in 1999. Class A shares amount to 51 percent ownership of the firm and are controlled by creditors.

**Table B6**  
**Regression Results**  
**Full Sample**  
*y = presence*

This table reports results of regressing PRESENCE on the Herfindahl index and ADR. PRESENCE is the percentage of days of the year the stock has been traded. The Herfindahl index is the sum of squares of the top five shareholdings. ADR is a dummy given the value of one if a firm has issued American Depository Receipts or has listed on a foreign exchange. *p*-values are reported in parentheses.

Variable	Non-Consolidated Data		Consolidated Data	
	2001	2000	2001	2000
Constant	33.436 (.000)	34.549 (.000)	33.018 (.000)	33.57 (.000)
Herfindahl Index	-.212 (.081)	-.239 (.049)	-.245 (.068)	-.248 (.065)
ADR	50.36 (.000)	47.445 (.000)	52.264 (.000)	49.866 (.000)
Observations	101	100	87	86
R-squared	.275	.273	.308	.301
Adjusted R-squared	.261	.258	.292	.284
F-statistic	18.63 (.000)	18.23 (.000)	18.73 (.000)	17.84 (.000)

**Table B7**  
**Regression Results**  
**Full Sample**  
**(2000 Non-Consolidated Data)**  
*y = total debt to total assets ratio*

This table reports results of regressing leverage on family ownership. Leverage is measured as the book value of debt divided by total assets. Family firms (FAMILY) are firms where control by a family or coalition of individuals is maintained. Ln (Total assets) is the natural log of total assets. EBIT/Total assets is the ratio of earnings before interest and taxes to total assets. Hi Risk is a dummy that equals one when the 3-year standard deviation of EBIT/Total assets exceeds the median value. Fixed assets/Total assets is the book value of fixed assets divided by total assets. GROUP2 is equal to one if a firm belongs to an economic group using the narrow definition of group membership. BANK is equal to one if a group has a bank as one of its members. Information Asymmetry is the residual of the regression of PRESENCE on the Herfindahl index and ADR. Institution is the percentage share of the holdings of the *Deposito Central de Valores* (DCV). FOREIGN takes the value of one if foreign ownership in a firm exceeds 10 percent. FAMILY\*Hi Risk is an interaction variable. *p*-values are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)
Constant	.513 (.972)	-2.221 (.881)	-18.552 (.243)	-13.454 (.382)	-16.935 (.292)
Ln (Total Assets)	.717 (.53)	1.01 (.386)	2.376 (.062)	1.561 (.231)	1.822 (.144)
EBIT/Total assets	-.488 (.038)	-.497 (.034)	-.538 (.018)	-.616 (.006)	-.604 (.007)
Hi Risk	2.768 (.366)	2.968 (.333)	2.578 (.383)	4.527 (.127)	7.99 (.202)
Fixed assets/Total assets	.104 (.143)	.103 (.147)	.134 (.055)	.122 (.068)	.127 (.06)
FAMILY	6.827 (.066)	7.52 (.046)	6.048 (.092)	7.092 (.13)	8.00 (.129)
GROUP2		-3.854 (.485)			
BANK		-1.473 (.81)			
Information Asymmetry			-.143 (.009)	-.164 (.002)	-.167 (.002)
Institution				.428 (.005)	.416 (.007)
Foreign				1.973 (.638)	
FAMILY*Hi Risk					-4.156 (.548)
Observations	88	88	88	88	88
R-squared	.103	.127	.176	.256	.257
Adjusted R-squared	.048	.05	.115	.181	.182
F-statistic	1.88 (.107)	1.66 (.132)	2.89 (.013)	3.4 (.002)	3.42 (.002)

**Table B8**  
**Regression Results**  
**Full Sample**  
**(2000 Consolidated Data)**

$y = \text{total debt to total assets ratio}$

This table reports results of regressing leverage on family ownership. Leverage is measured as the book value of debt divided by total assets. Family firms (FAMILY) are firms where control by a family or coalition of individuals is maintained. Ln (Total assets) is the natural log of total assets. EBIT/Total assets is the ratio of earnings before interest and taxes to total assets. Hi Risk is a dummy that equals one when the 3-year standard deviation of EBIT/Total assets exceeds the median value. Fixed assets/Total assets is the book value of fixed assets divided by total assets. GROUP2 is equal to one if a firm belongs to an economic group using the narrow definition of group membership. BANK is equal to one if a group has a bank as one of its members. Information Asymmetry is the residual of the regression of PRESENCE on the Herfindahl index and ADR. Institution is the percentage share of the holdings of the *Deposito Central de Valores* (DCV). FOREIGN takes the value of one if foreign ownership in a firm exceeds 10 percent. FAMILY\*Hi Risk is an interaction variable. *p*-values are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)
Constant	-11.776 (.402)	-17.613 (.175)	-26.58 (.054)	-24.229 (.076)	-24.687 (.094)
Ln (Total Assets)	2.236 (.035)	2.971 (.005)	3.822 (.001)	3.779 (.002)	3.406 (.003)
EBIT/Total assets	-.392 (.087)	-.451 (.042)	-.461 (.033)	-.485 (.025)	-.514 (.019)
Hi Risk	3.826 (.242)	5.461 (.094)	5.374 (.089)	5.926 (.058)	7.474 (.321)
Fixed assets/Total assets	.055 (.493)				
FAMILY	7.624 (.057)	9.752 (.013)	8.64 (.026)	5.372 (.28)	10.011 (.144)
GROUP2		-12.508 (.029)	-10.119 (.006)	-9.516 (.009)	-9.725 (.008)
BANK		3.094 (.635)			
Information Asymmetry			-.098 (.082)	-.128 (.028)	-.113 (.047)
Institution				.277 (.078)	.286 (.071)
Foreign				-4.402 (.308)	
FAMILY*Hi Risk					-1.881 (.814)
Observations	78	78	78	78	78
R-squared	.125	.214	.245	.29	.28
Adjusted R-squared	.081	.147	.181	.208	.197
F-statistic	2.06 (.064)	3.22 (.007)	3.83 (.002)	3.53 (.002)	3.35 (.003)

**Table B9**  
**Regression Results**  
**Full Sample**  
**(2001 Non-Consolidated Data)**

*y = long-term liabilities to total assets ratio*

This table reports results of regressing leverage on family ownership. Leverage is measured as the book value of long-term liabilities divided by total assets. Family firms (FAMILY) are firms where control by a family or coalition of individuals is maintained. Ln (Total assets) is the natural log of total assets. EBIT/Total assets is the ratio of earnings before interest and taxes to total assets. Hi Risk is a dummy that equals one when the 3-year standard deviation of EBIT/Total assets exceeds the median value. Fixed assets/Total assets is the book value of fixed assets divided by total assets. GROUP2 is equal to one if a firm belongs to an economic group using the narrow definition of group membership. BANK is equal to one if a group has a bank as one of its members. Information Asymmetry is the residual of the regression of PRESENCE on the Herfindahl index and ADR. Institution is the percentage share of the holdings of the *Deposito Central de Valores* (DCV). FOREIGN takes the value of one if foreign ownership in a firm exceeds 10 percent. FAMILY\*Hi Risk is an interaction variable. *p*-values are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)
Constant	-35.17 (.005)	-34.667 (.007)	-55.663 (.000)	-50.403 (.000)	-60.744 (.000)
Ln (Total Assets)	3.736 (.000)	3.684 (.000)	5.566 (.000)	4.999 (.000)	5.637 (.000)
EBIT/Total assets	-.266 (.205)	-.268 (.208)	-.326 (.105)	-.286 (.154)	-.325 (.104)
Hi Risk	-1.119 (.688)	-1.249 (.663)	-.809 (.76)		6.672 (.229)
Fixed assets/Total assets	.092 (.141)	.092 (.143)	.111 (.063)	.087 (.107)	.113 (.057)
FAMILY	5.128 (.101)	5.037 (.117)	4.045 (.175)	3.996 (.295)	9.032 (.041)
GROUP2		.057 (.99)			
BANK		1.225 (.805)			
Information Asymmetry			-.149 (.002)	-.147 (.002)	-.139 (.004)
Institution				.106 (.325)	
Foreign				.798 (.819)	
FAMILY*Hi Risk					-9.143 (.126)
Observations	92	92	92	95	92
R-squared	.199	.20	.287	.271	.306
Adjusted R-squared	.152	.134	.236	.213	.249
F-statistic	4.27 (.002)	3.00 (.007)	5.7 (.000)	4.62 (.000)	5.3 (.000)

**Table B10**  
**Regression Results**  
**Full Sample**  
**(2001 Consolidated Data)**

*y = long-term liabilities to total assets ratio*

This table reports results of regressing leverage on family ownership. Leverage is measured as the book value of long-term liabilities divided by total assets. Family firms (FAMILY) are firms where control by a family or coalition of individuals is maintained. Ln (Total assets) is the natural log of total assets. EBIT/Total assets is the ratio of earnings before interest and taxes to total assets. Hi Risk is a dummy that equals one when the 3-year standard deviation of EBIT/Total assets exceeds the median value. Fixed assets/Total assets is the book value of fixed assets divided by total assets. GROUP2 is equal to one if a firm belongs to an economic group using the narrow definition of group membership. BANK is equal to one if a group has a bank as one of its members. Information Asymmetry is the residual of the regression of PRESENCE on the Herfindahl index and ADR. Institution is the percentage share of the holdings of the *Deposito Central de Valores* (DCV). FOREIGN takes the value of one if foreign ownership in a firm exceeds 10 percent. FAMILY\*Hi Risk is an interaction variable. *p*-values are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)
Constant	-43.042 (.000)	-44.584 (.000)	-56.122 (.000)	-58.376 (.000)	-55.874 (.000)
Ln (Total Assets)	4.304 (.000)	4.53 (.000)	5.569 (.000)	6.281 (.000)	6.083 (.000)
EBIT/Total assets	-.51 (.051)	-.393 (.03)	-.42 (.017)	-.388 (.021)	-.414 (.016)
Hi Risk	.712 (.774)	.583 (.813)	NS	NS	.677 (.896)
Fixed assets/Total assets	-.11 (.051)	.095 (.094)	.126 (.02)	.128 (.014)	.109 (.05)
FAMILY	4.78 (.094)	5.521 (.056)	3.527 (.199)	-3.659 (.301)	-2.084 (.677)
GROUP2		-7.93 (.078)	-8.034 (.065)	-7.642 (.078)	-7.91 (.072)
BANK		7.52 (.145)	8.012 (.109)	9.657 (.052)	10.113 (.046)
Information Asymmetry			-.109 (.02)	-.131 (.005)	-.121 (.014)
Institution				NS	
Foreign				-7.906 (.015)	-7.687 (.032)
FAMILY*Hi Risk					-2.243 (.687)
FAMILY*CEO				4.277 (.101)	5.127 (.058)
Observations	79	79	81	81	79
R-squared	.376	.403	.434	.501	.512
Adjusted R-squared	.333	.344	.379	.438	.432
F-statistic	8.8 (.000)	6.85 (.000)	7.99 (.000)	7.92 (.000)	6.39 (.000)

NS: Not significant when included in the specification. The reported results correspond to a model where this variable is excluded. Its inclusion, however, does not change the reported results.

**Table B11**  
**Regression Results**  
**Full Sample**  
**(2000 Non-Consolidated Data)**

*y = long-term liabilities to total assets ratio*

This table reports results of regressing leverage on family ownership. Leverage is measured as the book value of long-term liabilities divided by total assets. Family firms (FAMILY) are firms where control by a family or coalition of individuals is maintained. Ln (Total assets) is the natural log of total assets. EBIT/Total assets is the ratio of earnings before interest and taxes to total assets. Hi Risk is a dummy that equals one when the 3-year standard deviation of EBIT/Total assets exceeds the median value. Fixed assets/Total assets is the book value of fixed assets divided by total assets. GROUP2 is equal to one if a firm belongs to an economic group using the narrow definition of group membership. BANK is equal to one if a group has a bank as one of its members. Information Asymmetry is the residual of the regression of PRESENCE on the Herfindahl index and ADR. Institution is the percentage share of the holdings of the *Deposito Central de Valores* (DCV). FOREIGN takes the value of one if foreign ownership in a firm exceeds 10 percent. FAMILY\*Hi Risk is an interaction variable. *p*-values are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)
Constant	-35.98 (.009)	-38.803 (.005)	-52.145 (.001)	-52.628 (.001)	-57.384 (.000)
Ln (Total Assets)	3.664 (.000)	3.954 (.000)	5.257 (.000)	5.168 (.000)	5.683 (.000)
EBIT/Total assets	-.776 (.000)	-.783 (.000)	-.79 (.000)	-.796 (.001)	-.864 (.000)
Hi Risk	-.399 (.888)	-.554 (.843)			-1.773 (.772)
Fixed assets/Total assets	.179 (.007)	.173 (.008)	.16 (.012)	.159 (.012)	.195 (.002)
FAMILY	5.445 (.116)	6.508 (.056)	4.6 (.187)	6.412 (.158)	4.517 (.376)
GROUP2		-8.961 (.067)	-5.702 (.212)	-5.826 (.21)	-9.873 (.038)
BANK		7.466 (.172)	5.575 (.292)	5.194 (.34)	9.605 (.076)
Information Asymmetry			-.152 (.004)	-.143 (.01)	-.145 (.006)
Institution				.072 (.633)	
Foreign				2.425 (.554)	
FAMILY*Hi Risk					1.145 (.865)
Observations	90	90	94	94	90
R-squared	.227	.26	.266	.271	.325
Adjusted R-squared	.181	.197	.206	.193	.249
F-statistic	4.93 (.001)	4.12 (.001)	4.45 (.000)	3.47 (.001)	4.28 (.000)



**Table B12**  
**Regression Results**  
**Full Sample**  
**(2000 Consolidated Data)**

$$y = \text{long-term liabilities to total assets ratio}$$

This table reports results of regressing leverage on family ownership. Leverage is measured as the book value of long-term liabilities divided by total assets. Family firms (FAMILY) are firms where control by a family or coalition of individuals is maintained. Ln (Total assets) is the natural log of total assets. EBIT/Total assets is the ratio of earnings before interest and taxes to total assets. Hi Risk is a dummy that equals one when the 3-year standard deviation of EBIT/Total assets exceeds the median value. Fixed assets/Total assets is the book value of fixed assets divided by total assets. GROUP2 is equal to one if a firm belongs to an economic group using the narrow definition of group membership. BANK is equal to one if a group has a bank as one of its members. Information Asymmetry is the residual of the regression of PRESENCE on the Herfindahl index and ADR. Institution is the percentage share of the holdings of the *Deposito Central de Valores* (DCV). FOREIGN takes the value of one if foreign ownership in a firm exceeds 10 percent. FAMILY\*Hi Risk is an interaction variable. *p*-values are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)
Constant	-31.918 (.011)	-35.757 (.001)	-43.716 (.001)	-43.694 (.001)	-42.166 (.004)
Ln (Total Assets)	3.679 (.000)	4.102 (.000)	4.863 (.000)	5.143 (.000)	4.745 (.000)
EBIT/Total assets	-.679 (.001)	-.701 (.001)	-.747 (.000)	-.745 (.000)	-.786 (.000)
Hi Risk	-1.013 (.727)				-2.773 (.697)
Fixed assets/Total assets	.107 (.121)	.097 (.146)	.093 (.18)	.094 (.179)	.112 (.119)
FAMILY	5.128 (.148)	4.997 (.144)	4.653 (.17)	1.317 (.762)	2.68 (.681)
GROUP2		-9.49 (.076)	-9.749 (.066)	10.028 (.066)	-8.062 (.134)
BANK		7.374 (.228)	7.655 (.205)	8.616 (.171)	7.057 (.258)
Information Asymmetry			-.084 (.112)	-.101 (.066)	-.077 (.151)
Institution				.073 (.626)	
Foreign				-4.785 (.234)	
FAMILY*Hi Risk					1.677 (.826)
FAMILY*CEO					4.448 (.184)
Observations	79	81	80		79
R-squared	.291	.306	.333		.364
Adjusted R-squared	.242	.25	.269		.271
F-statistic	5.98 (.000)	5.44 (.000)	5.14 (.000)		3.9 (.000)

**Table B13**  
**Regression Results**  
**Family Sub-Sample**  
**(2000 Non-Consolidated Data)**

$y = \text{total debt to total assets ratio}$

This table reports results of regressing leverage on characterizing features of family-controlled firms. Leverage is measured as the book value of debt divided by total assets. Ln (Total assets) is the natural log of total assets. EBIT/Total assets is the ratio of earnings before interest and taxes to total assets. Hi Risk is a dummy that equals one when the 3-year standard deviation of EBIT/Total assets exceeds the median value. Fixed assets/Total assets is the book value of fixed assets divided by total assets. To proxy for free cash flow, an interaction variable, LoInvestment\*HiProfit, is used. LoInvestment is a dummy given the value of one when the capital expenditures to total assets ratio is less than the median value. HiProfit is a dummy set equal to one when the EBIT to total assets ratio is greater than the median value. INDIRECT is a dummy given the value of one when the chain of ownership is of an indirect nature. Cash flow leverage is calculated as control rights divided by cash flow rights. Board control (BOARD) is defined as the fraction of board seats held by the family/coalition divided by board size. CEO is a dummy that equals one if the CEO is a family member.  $p$ -values are reported in parentheses.

	(1)	(2)
Constant	7.028 (.676)	14.373 (.347)
Ln (Total Assets)	.722 (.599)	.207 (.866)
EBIT/Total assets	-.664 (.031)	-.63 (.026)
Hi Risk	2.216 (.531)	
Fixed Assets/Total Assets	.125 (.156)	.124 (.12)
LoInvestment*HiProfit	4.86 (.306)	5.733 (.171)
INDIRECT	.38 (.917)	
Cash flow leverage		-.488 (.368)
BOARD		
CEO		
Observations	68	65
R-squared	.108	.134
Adjusted R-squared	.02	.061
F-statistic	1.23 (.302)	1.83 (.121)

**Table B14**  
**Regression Results**  
**Family Sub-Sample**  
**(2000 Consolidated Data)**

$$y = \text{total debt to total assets ratio}$$

This table reports results of regressing leverage on characterizing features of family-controlled firms. Leverage is measured as the book value of debt divided by total assets. Ln (Total assets) is the natural log of total assets. EBIT/Total assets is the ratio of earnings before interest and taxes to total assets. Hi Risk is a dummy that equals one when the 3-year standard deviation of EBIT/Total assets exceeds the median value. Fixed assets/Total assets is the book value of fixed assets divided by total assets. To proxy for free cash flow, an interaction variable, LoInvestment\*HiProfit, is used. LoInvestment is a dummy given the value of one when the capital expenditures to total assets ratio is less than the median value. HiProfit is a dummy set equal to one when the EBIT to total assets ratio is greater than the median value. INDIRECT is a dummy given the value of one when the chain of ownership is of an indirect nature. Cash flow leverage is calculated as control rights divided by cash flow rights. Board control (BOARD) is defined as the fraction of board seats held by the family/coalition divided by board size. CEO is a dummy that equals one if the CEO is a family member. *p*-values are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-21.667 (.175)	-7.32 (.621)	-18.517 (.203)	-17.345 (.242)	-7.637 (.307)	-5.917 (.695)
Ln (Total Assets)	3.837 (.003)	3.158 (.013)	3.387 (.007)	3.717 (.003)	2.882 (.029)	3.123 (.015)
EBIT/Total assets	-.354 (.158)	-.446 (.081)	-.328 (.18)	-.327 (.19)	-.444 (.083)	-.445 (.083)
Hi Risk	5.815 (.104)	5.033 (.152)	4.709 (.185)	5.715 (.11)	4.698 (.184)	5.097 (.15)
Fixed Assets/Total Assets	.055 (.532)					
LoInvestment*HiProfit <sup>a</sup>						
INDIRECT	-7.665 (.053)		-5.783 (.132)	-7.365 (.061)		
Cash flow leverage		-3.379 (.04)			-2.87 (.103)	-3.629 (.036)
BOARD			.135 (.163)		.087 (.416)	
CEO				-1.445 (.698)		-2.015 (.592)
Observations	63	57	63	63	57	57
R-squared	.166	.178	.188	.162	.189	.183
Adjusted R-squared	.093	.115	.117	.089	.11	.103
F-statistic	2.27 (.06)	2.82 (.034)	2.65 (.032)	2.21 (.066)	2.38 (.052)	2.28 (.06)

<sup>a</sup>The coefficient of the free cash flow variable is not significant and its inclusion does not alter the results.

**Table B15**  
**Regression Results**  
**Family Sub-Sample**  
**(2001 Non-Consolidated Data)**

*y = long-term liabilities to total assets ratio*

This table reports results of regressing leverage on characterizing features of family-controlled firms. Leverage is measured as the book value of long-term liabilities divided by total assets. Ln (Total assets) is the natural log of total assets. EBIT/Total assets is the ratio of earnings before interest and taxes to total assets. Hi Risk is a dummy that equals one when the 3-year standard deviation of EBIT/Total assets exceeds the median value. Fixed assets/Total assets is the book value of fixed assets divided by total assets. To proxy for free cash flow, an interaction variable, LoInvestment\*HiProfit, is used. LoInvestment is a dummy given the value of one when the capital expenditures to total assets ratio is less than the median value. HiProfit is a dummy set equal to one when the EBIT to total assets ratio is greater than the median value. INDIRECT is a dummy given the value of one when the chain of ownership is of an indirect nature. Cash flow leverage is calculated as control rights divided by cash flow rights. Board control (BOARD) is defined as the fraction of board seats held by the family/coalition divided by board size. CEO is a dummy that equals one if the CEO is a family member. *p*-values are reported in parentheses.

	(1)	(2)
Constant	-39.224 (.005)	-39.566 (.008)
Ln (Total Assets)	4.557 (.000)	4.557 (.000)
EBIT/Total assets	-.104 (.671)	-.117 (.688)
Hi Risk	-1.027 (.754)	-1.246 (.727)
Fixed Assets/Total Assets	.047 (.525)	.057 (.5)
LoInvestment*HiProfit	-.817 (.838)	-.522 (.905)
INDIRECT	.419 (.892)	
Cash flow leverage		.182 (.736)
BOARD		
CEO		
Observations	69	63
R-squared	.253	.227
Adjusted R-squared	.181	.144
F-statistic	3.5 (.005)	2.74 (.021)

**Table B16**  
**Regression Results**  
**Family Sub-Sample**  
**(2001 Consolidated Data)**

*y = long-term liabilities to total assets ratio*

This table reports results of regressing leverage on characterizing features of family-controlled firms. Leverage is measured as the book value of long-term liabilities divided by total assets. Ln (Total assets) is the natural log of total assets. EBIT/Total assets is the ratio of earnings before interest and taxes to total assets. Hi Risk is a dummy that equals one when the 3-year standard deviation of EBIT/Total assets exceeds the median value. Fixed assets/Total assets is the book value of fixed assets divided by total assets. To proxy for free cash flow, an interaction variable, LoInvestment\*HiProfit, is used. LoInvestment is a dummy given the value of one when the capital expenditures to total assets ratio is less than the median value. HiProfit is a dummy set equal to one when the EBIT to total assets ratio is greater than the median value. INDIRECT is a dummy given the value of one when the chain of ownership is of an indirect nature. Cash flow leverage is calculated as control rights divided by cash flow rights. Board control (BOARD) is defined as the fraction of board seats held by the family/coalition divided by board size. CEO is a dummy that equals one if the CEO is a family member. *p*-values are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-49.211 (.000)	-48.102 (.000)	-47.77 (.000)	-52.11 (.000)	-46.6 (.000)	-52.273 (.000)
Ln (Total Assets)	5.345 (.000)	5.435 (.000)	5.269 (.000)	5.304 (.000)	5.527 (.000)	5.495 (.000)
EBIT/Total assets	-.318 (.139)	-.377 (.105)	-.316 (.145)	-.302 (.146)	-.377 (.112)	-.357 (.118)
Hi Risk	.705 (.8)					
Fixed Assets/Total Assets	.103 (.135)	.135 (.051)	.101 (.145)	.125 (.053)	.112 (.127)	.143 (.036)
INDIRECT	-3.21 (.299)		-3.167 (.308)	-1.606 (.6)		
Cash flow leverage		-2.68 (.054)			-2.873 (.054)	-1.948 (.169)
BOARD			-.004 (.956)		-.301 (.747)	
CEO				5.585 (.048)		5.314 (.081)
LoInvestment*HiProfit <sup>a</sup>						
Observations	63	58	63	64	57	58
R-squared	.41	.416	.409	.453	.412	.449
Adjusted R-squared	.358	.372	.357	.406	.355	.396
F-statistic	7.91 (.000)	9.43 (.000)	7.89 (.000)	9.59 (.000)	7.16 (.000)	8.49 (.000)

<sup>a</sup>The coefficient of the free cash flow variable is not significant and its inclusion does not alter the results.

**Table B17**  
**Regression Results**  
**Family Sub-Sample**  
**(2000 Non-Consolidated Data)**

*y = long-term liabilities to total assets ratio*

This table reports results of regressing leverage on characterizing features of family-controlled firms. Leverage is measured as the book value of long-term liabilities divided by total assets. Ln (Total assets) is the natural log of total assets. EBIT/Total assets is the ratio of earnings before interest and taxes to total assets. Hi Risk is a dummy that equals one when the 3-year standard deviation of EBIT/Total assets exceeds the median value. Fixed assets/Total assets is the book value of fixed assets divided by total assets. To proxy for free cash flow, an interaction variable, LoInvestment\*HiProfit, is used. LoInvestment is a dummy given the value of one when the capital expenditures to total assets ratio is less than the median value. HiProfit is a dummy set equal to one when the EBIT to total assets ratio is greater than the median value. INDIRECT is a dummy given the value of one when the chain of ownership is of an indirect nature. Cash flow leverage is calculated as control rights divided by cash flow rights. Board control (BOARD) is defined as the fraction of board seats held by the family/coalition divided by board size. CEO is a dummy that equals one if the CEO is a family member. *p*-values are reported in parentheses.

	(1)	(2)	(3)	(4)
Constant	-42.126 (.02)	-34.934 (.012)	-44.775 (.001)	-41.806 (.003)
Ln (Total Assets)	4.603 (.000)	3.899 (.000)	4.493 (.000)	4.595 (.000)
EBIT/Total assets	-.756 (.002)	-.764 (.003)	-.767 (.002)	-.753 (.003)
Hi Risk	2.202 (.432)	2.115 (.467)	2.56 (.36)	2.23 (.43)
Fixed Assets/Total Assets	.134 (.084)	.202 (.007)	.217 (.003)	.212 (.004)
LoInvestment*HiProfit	-2.654 (.475)	-1.846 (.623)	-3.311 (.374)	-2.683 (.475)
INDIRECT	-4.225 (.14)		-3.253 (.265)	-4.416 (.153)
Cash flow leverage		-.391 (.441)		
BOARD			.106 (.169)	
CEO				-.583 (.861)
Observations	69	64	69	69
R-squared	.34	.316	.36	.34
Adjusted R-squared	.276	.244	.286	.264
F-statistic	5.31 (.000)	4.4 (.001)	4.9 (.000)	4.49 (.000)

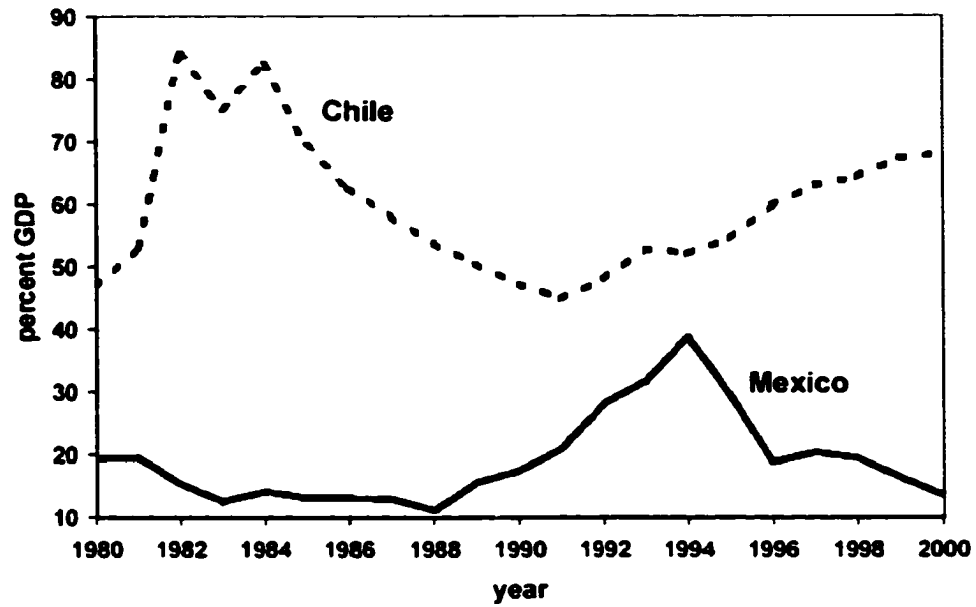
**Table B18**  
**Regression Results**  
**Family Sub-Sample**  
**(2000 Consolidated Data)**

$$y = \text{long-term liabilities to total assets ratio}$$

This table reports results of regressing leverage on characterizing features of family-controlled firms. Leverage is measured as the book value of long-term liabilities divided by total assets. Ln (Total assets) is the natural log of total assets. EBIT/Total assets is the ratio of earnings before interest and taxes to total assets. Hi Risk is a dummy that equals one when the 3-year standard deviation of EBIT/Total assets exceeds the median value. Fixed assets/Total assets is the book value of fixed assets divided by total assets. To proxy for free cash flow, an interaction variable, LoInvestment\*HiProfit, is used. LoInvestment is a dummy given the value of one when the capital expenditures to total assets ratio is less than the median value. HiProfit is a dummy set equal to one when the EBIT to total assets ratio is greater than the median value. INDIRECT is a dummy given the value of one when the chain of ownership is of an indirect nature. Cash flow leverage is calculated as control rights divided by cash flow rights. Board control (BOARD) is defined as the fraction of board seats held by the family/coalition divided by board size. CEO is a dummy that equals one if the CEO is a family member. *p*-values are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-36.631 (.017)	-34.909 (.012)	-35.881 (.009)	-40.601 (.003)	-31.851 (.023)	-37.946 (.008)
Ln (Total Assets)	4.575 (.000)	4.592 (.000)	4.559 (.000)	4.629 (.000)	4.851 (.000)	4.65 (.000)
EBIT/Total assets	-.661 (.008)	-.781 (.004)	-.662 (.008)	-.662 (.007)	-.798 (.003)	-.786 (.003)
Hi Risk	.272 (.936)					.14 (.093)
Fixed Assets/Total Assets	.0877 (.287)	.131 (.112)	.087 (.289)	.116 (.139)	.103 (.224)	
INDIRECT	-1.921 (.61)		-1.94 (.605)	-.652 (.86)		
Cash flow leverage		-2.637 (.109)			-3.298 (.061)	-2.155 (.204)
BOARD			-.011 (.906)		-.103 (.33)	
CEO				4.879 (.16)		3.933 (.286)
LoInvestment*HiProfit <sup>a</sup>						
Observations	64	59	64	65	58	59
R-squared	.285	.308	.285	.311	.321	.323
Adjusted R-squared	.224	.256	.224	.253	.255	.259
F-statistic	4.63 (.001)	6 (.000)	4.63 (.001)	5.34 (.000)	4.91 (.001)	5.05 (.001)

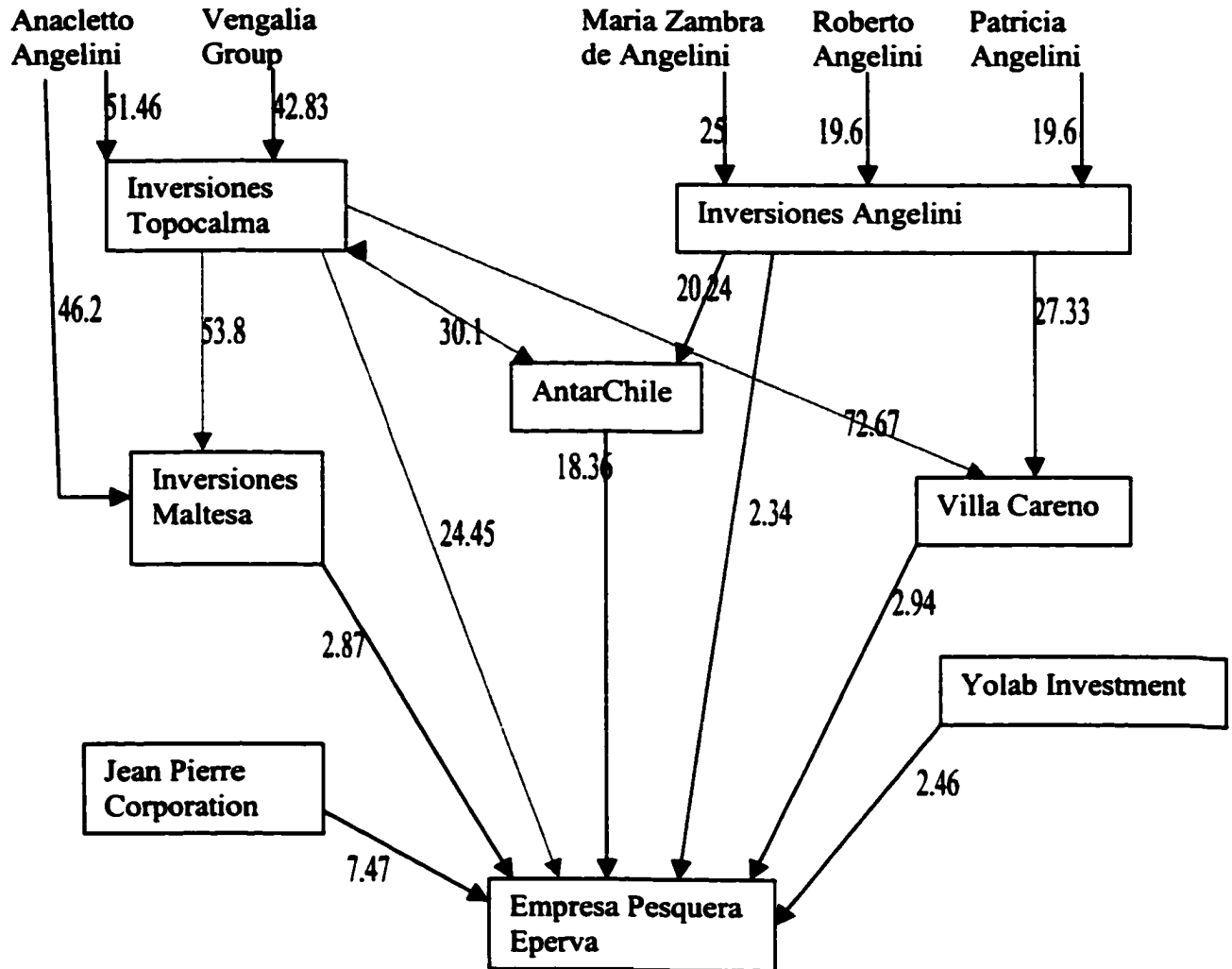
<sup>a</sup>The coefficient of the free cash flow variable is not significant and its inclusion does not alter the results.

**Figure B1. Private Credit as a Percentage of GDP.**

Source: Bergoing, Kehoe, Kehoe and Soto (2002).



**Figure B2. Ultimate Ownership Structure of *Empresa Pesquera Eperva***



## VITA

Suad Ghaddar

### Education

1997-2003	University of Texas-Pan American	Ph.D.	Business Administration
1988-1990	American University of Beirut	MBA	Business Administration
1985-1988	American University of Beirut	BBA	Business Administration

### Academic Awards and Honors

BBA with distinction  
Dean's Honor List  
Director's Merit List  
Business Club Award

### Teaching Experience

Adjunct Instructor	University of Texas-Brownsville	Fall 2000-Spring 2001
Adjunct Instructor	University of Texas-Pan American	Spring 1996-Fall 1996
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### Publications

Stock market development and economic growth: A stochastic frontier approach. 2001. *Journal of Accounting and Finance Research*, 9 (5), 81-90. (Co-authored with H. Young Baek).

International success of business groups as an indicator of national competitiveness: The Mexican example. 2001. *Latin American Business Review*, 2, 97-121. (Co-authored with John Sargent).

Factors influencing stock market development in emerging markets. *Proceedings, Academy of International Business Southwest Chapter Meeting*. San Antonio, March 2000.

Latin American industrial groups: Emerging multinationals and the Mexican example. *Proceedings, Business Association of Latin American Studies*. New Orleans, April 1999. (Co-authored with John Sargent).

### Professional Affiliations

American Finance Association  
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